

Renewable Resources

Graduate Program Handbook

2008 - 2009

Department of Renewable Resources
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PREFACE

This handbook has been prepared to summarize Departmental and Faculty of Graduate Studies and Research (FGSR) policies and procedures for Graduate Programs. Please read the contents of this booklet with care and retain it for future reference.

Graduate students should also refer to the current **University of Alberta Calendar**, found at: <http://www.registrar.ualberta.ca/calendar/GradStudies-and-Research/index.html> .

Please note the following sections:

- [202](#) General Information
- [203](#) Regulations of the Faculty of Graduate Studies and Research
- [204](#) Degree and Postgraduate Diploma Regulations
 - Master's Degrees
 - Doctoral Degrees
- [205.68](#) Graduate Programs: Renewable Resources

All departments and graduate students abide by regulations set forth by FGSR. In its administrative capacity, FGSR is responsible for approving applications for admission and programs of study, for certifying the satisfactory completion of each student's program prior to graduation, for maintaining the academic records of all students registered in the Faculty, and for administering the graduate awards program.

Faculty of Graduate Studies and Research
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homepage: <http://www.gradstudies.ualberta.ca/>.

Renewable Resources Graduate Program Committee

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Dr. Lee Foote	492-4020	855E GSB	lee.foote@ualberta.ca
Dr. Ellen Macdonald	492-3070	743 GSB	ellen.macdonald@ualberta.ca
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Amanda Brown, Grad Contact	492-2820	751C GSB	amanda.brown@ualberta.ca
Mr. Jared LeBoldus, Grad Rep	492-4310	347C ESB	jared.leboldus@ualberta.ca

FGSR student advisors for Faculty of Agricultural, Life & Environmental Sciences Graduate Students

Name	Phone	E-mail address
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Jennifer Parkatti (awards)	492-0690	jennifer.parkatti@ualberta.ca

Graduate Program Important Deadlines

For 2008-2009 Academic Year

CONVOCAATION DEADLINES

Oct 3, 2008	Last day for submission of unbound thesis to FGSR to ensure graduation at Fall Convocation
Apr 17, 2008	Last day for submission of unbound thesis to FGSR to ensure graduation at Spring Convocation
Nov 20, 2008	Fall Convocation for FGSR; (10 am MSc; 3 pm PhD)
June 5, 2009	Spring Convocation for FGSR (date subject to change)

REGISTRATION DEADLINES and UNIVERSITY CLOSURES

Sept 1	Labour Day; university buildings closed
Sept 3	Fall term classes begin.
Sept 16	Fall Registration Deadline: Last day to add or drop Fall term courses. Students withdrawing after this date through October 3 will be assessed 50% fees for withdrawn courses.
Sept 17-23	Registration by graduate students to audit Fall term courses will be accepted only during this period.
Sept 30	Payment Deadline: Last day for payment of Fall term fees. Students who have not paid their fees in full, or made satisfactory alternate arrangements, will be assessed late payment penalty charges.
Oct 2	Last day for changing from “ credit ” to “ audit ” in Fall term courses by graduate students.
Oct 3	Fall Term Refund Deadline: Students withdrawing after this date will be assessed full fees.
Oct 13	Thanksgiving Day holiday; university buildings closed
Nov 7	Last day for withdrawal from Fall Term courses
Nov 10	Fall Term class break; classes withdrawn except for students in Augustana faculty
Nov 11	Remembrance Day holiday; university buildings closed
Dec 3	Last day of Fall term classes
Dec 6-18	Fall term final exams
Dec 25-Jan 1	Christmas holidays; university buildings closed
Jan 5	Winter term classes begin
Jan 8	Generally the 5 th business day in January is the last day for submission of unbound thesis to FGSR to avoid Winter term registration
Jan 16	Winter Term Registration Deadline: Last day to add or drop Winter term courses. Students withdrawing after this date through February 4 will be assessed 50% fees for withdrawn courses.
Jan 19-23	Registration by graduate students to audit Winter term courses will be accepted only during this period
Jan 30	Payment Deadline: Last day for payment of Winter term fees. Students who have not paid their fees in full, or made satisfactory alternate arrangements, will be assessed late payment penalty charges.
Feb 2	Last day for changing from “ credit ” to “ audit ” in Winter term courses by graduate students
Feb 4	Winter Term Refund Deadline: Students withdrawing after this date will be assessed full fees
Feb 16	Provincial statutory holiday; university buildings closed
Feb 16-20	Winter Term Reading Week; no classes scheduled
Mar 13	Last day for withdrawal from Winter Term courses
April 8	Last day of Winter term classes
Apr 10	Good Friday; university buildings closed
Apr 13	Easter Monday; university buildings closed
April 14-25	Winter term final exams

FIELDS OF STUDY FOR GRADUATE PROGRAMS

Graduate studies in the Department of Renewable Resources encompass a broad spectrum of scientific and management applications in natural and managed landscapes within four major research themes: 1) **Enhanced Forest Management** 2) **Environmentally Sustainable Agriculture** 3) **Land Reclamation Remediation, and Restoration** and 4) **Biodiversity Conservation**. The Department offers programs leading to thesis-based MSc and PhD and course-based degrees of MAg and MF. Departments of the Faculty of Agricultural, Life & Environmental Sciences and the School of Business also offer two course-based programs of joint study that enable students to earn both the MBA and MAg degrees or both the MBA and MF degrees, after two calendar years of full-time study.

Areas of interest are under the following approved fields of study:

Fields of Study and Degrees to which they apply:

Agroforestry	MSc
Conservation Biology	MSc, PhD
Forest Biology & Management	MSc, PhD
Land Reclamation & Remediation	MSc, PhD
Protected Areas & Wildlands Management	MSc, PhD
Soil Science	MSc, PhD
Water and Land Resources	MSc, PhD
Wildlife Ecology & Management	MSc, PhD

Agroforestry - This is a special, faculty-wide specialization available in the MSc program. It is a Field of Study for students focused on the interdisciplinary domain of sciences which integrates the propagation of woody perennials, the raising of crops, and animal husbandry practices with human land use systems. Agroforestry involves a holistic approach to agriculture and forestry production recognizing the critical nature of environmental, social and economic concerns in temperate and tropical regions. As such it includes research focused on: the global crises of deforestation, soil erosion and poverty; enhancing and sustaining global food production; developing a scientific understanding of the relationship among woody plants, natural ecosystems and traditional land use systems; designing agroforestry programs to meet socio-economic needs; examining the role of trees, shrubs, and browse in soil fertility and erosion control; determining the sustainable benefits to be gained from integrating agricultural crops with tree crops.

Conservation Biology - A field of study for students conducting research focused on nature conservation, preservation, and management. It includes: human impacts on biodiversity; protection of rare species; design and management of nature reserves; wildlife conservation, preservation and restoration efforts; social and economic issues in conservation of biodiversity; social approaches to biodiversity conservation. It differs from Wildlife Ecology & Management in that it is strongly focused on conservation and preservation as opposed to basic biology, ecology or management. It differs from Protected Areas & Wildlands Management in that it is focused on conservation of organisms as opposed to landscapes or management for wilderness or recreation purposes.

Forest Biology & Management - A field of study for students conducting research focused on one or more of the following: developing a scientific understanding of the biology of forest organisms and ecosystems; applying this knowledge to management of the forest land base; developing systems for ecosystem management and/or sustainable forest management; forest harvesting, products and engineering. Included is research on: ecology, fire, genetics, hydrology, management, mensuration, pathology, physiology, silviculture, wildlife.

Land Reclamation & Remediation - A field of study for students conducting research on characteristics, processes, management, and amelioration of anthropogenically disturbed landscapes with emphasis on soil and vegetation components. This includes research on: soil remediation, revegetation of

disturbed lands, land reclamation, and the chemistry, biology and physics of contaminated soils and soil-waste combinations. This field compliments the engineering approach to reclamation by emphasizing an understanding of the ecological and physical processes that operate within landscapes and the consequences of their manipulation.

Protected Areas & Wildlands Management - A field of study for students focused on biological, social, or economic aspects inherent in the management of areas for wilderness conservation or preservation, recreation, environmental education, and/or tourism. This includes those landbases which are protected from resource extraction or industrial activity by law or policy or areas in which there is little such activity and the goal is to manage primarily for non-consumptive values or uses. Includes: ecological issues inherent in maintenance of ecological integrity and implementation of ecosystem management; social issues relevant to users, the local community, and the broader community; eco-tourism; economic issues associated with recreation and tourism including valuing of non-consumptive uses; interpretation and environmental education; development of landscape planning and management models and systems.

Soil Science - This field of study is for students engaged in research into soil as a natural, 3-dimensional body in landscapes and as a product of processes. It encompasses studies in which soil is conceptualized as a porous medium for gas, solute, water, and heat retention and/or transport or as an ecosystem, or ecosystem component, represented by organisms, biogeochemical cycles and matter and energy transformations. Most research in this area would be conducted at a scale of polypedon, pedon or smaller. Recognized subdisciplines in soil science include: pedology, soil biology and biochemistry, soil chemistry, soil fertility, soil mineralogy, and soil physics. Research topics that may range across subdisciplines are: metabolism of xenobiotic compounds, rhizosphere ecology, landscape ecology, soil-plant relationships, and vadose-ground water relationships.

Water and Land Resources - This field of study encompasses studies in which water or land (including soil, topography, and vegetation) is the focus and studies are conducted at the scale of polypedon or larger. Research would include issues associated with water and land use in the context of managing and conserving these natural resources. In addition, it could include use of land for disposal and amelioration of waste materials (animal manures, industrial products, urban garbage) while maintaining its sustainability in terms of food and fiber production. Specific research topics which would be included are: Land evaluation, remote sensing, soil erosion, landscape ecology, land use hydrology, conservation tillage, nutrient management, waste amelioration, watershed management, and atmospheric emissions. The defining features of this field of study are the resources of interest (land, water) and the scale of study (landscape).

Wildlife Ecology & Management - A field of study for students conducting research on wild plants and animals at the individual, population and/or community levels. It includes physiological, nutritional and behavioral ecology as well as dynamics of interacting populations. It could include a focus on impacts of forest harvest or land-use issues, particularly integration with energy development, forestry and agriculture. It could also involve analysis of subsistence and commercial wildlife utilization in relation to rural community development, indigenous knowledge and co-management of wildlife resources.

All students also have the option of selecting no "Field of Study" and have the degree granted in the Department name only.

DEPARTMENT ACADEMIC STAFF AND THEIR RESEARCH AREAS

ARMSTRONG, Glen W. Associate Professor. Landscape forestry and integrated resource management. Research interests: forest activity scheduling, forest economics, integrated resource management, forest level optimization and simulation modeling, policy analysis.

Email: glen.w.armstrong@ualberta.ca

Phone (780) 492-8221

Office: 807 General Services Building

BLENIS, Peter V. Professor and Associate Chair (Graduate Programs). Forest pathology. Research interests: epidemiology of western gall rust, Armillaria root disease and Septoria canker; screening for tree disease resistance.

Email: peter.blenis@ualberta.ca

Phone (780) 492-0106

Office: 841 General Services Building

CHANASYK, David S. Professor. Hydrology, applied soil physics, reclamation. Research interests: soil water, hydrology, snowmelt, runoff and erosion, soil compaction, land reclamation, and water quality.

Email: david.chanasyk@afhe.ualberta.ca

Phone (780) 492-6538

Office: 847 General Services Building

CHANG, Scott Associate Professor. Forest Soils and Nutrient Dynamics. Research interests: forest soil processes, soil microbial ecology, global change and soil acidification, carbon sequestration, forest fertilization, tree nutrition, forest ecophysiology, and silviculture-soil management interactions.

Email: scott.chang@ualberta.ca

Phone (780) 492-6375

Office: 424 Earth Sciences Building

COMEAU, Philip G. Professor. Silviculture and stand dynamics. Research interests: quantitative silviculture, mixedwood (aspen-spruce) silviculture; vegetation management; intra- and inter-specific competition, silvicultural systems (on sabbatical leave until December 2008).

Email: phil.comeau@ualberta.ca

Phone (780) 492-1879

Office: 426 Earth Sciences Building

DANCIK, Bruce P. Director - Devonian Botanic Garden and Professor (joint appointment with Renewable Resources). Forest genetics. Research interests: population structure, differentiation, genecology, mating systems and evolution of woody plant species; conservation biology, gene conservation, biodiversity; ethical issues of land use and conservation.

Email: bruce.dancik@ualberta.ca

Phone (780) 492-2387

Office: 801 General Services Building

DAVIDSON, Debra J. Associate Professor. (joint appointment with Rural Economy). Natural resource politics & governance, environmental risk; state theory; rural sociology. Research interests: population structure, differentiation, genecology, mating systems and evolution of woody plant species; conservation biology, gene conservation, biodiversity; ethical issues of land use and conservation. (on sabbatical leave until Oct 2008)

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ERBILGIN, Nadir Assistant Professor. Forest entomology. Research interests: population dynamics and chemical ecology of forest insects; plant-fungal-insect interaction; biological control; integrated pest management

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Phone: (780) 492-8693

Office: 230A Earth Sciences Building

FENG, Yongsheng. Associate Professor. Soil physics. Research interests: dynamic processes of mass & energy transport in the soil-plant-atmosphere system; effects of these processes on plant growth & environmental quality.
Email: yongsheng.feng@ualberta.ca
Phone (780) 492-4942
Office: 430 Earth Sciences Building

FOOTE, A. Lee. Associate Professor. Wetland ecology and management. Research interests: waterfowl habitat creation, disturbance and reclamation using adaptive management; wildlife habitat manipulation using natural processes; sustainable use of boreal wildlife. (on sabbatical until July 2008)
Email: lee.foote@ualberta.ca
Phone (780) 492-4020
Office: 855E General Services Building

GRANT, Robert F. Professor. Ecosystem modeling. Simulation modeling of physical, chemical and biological processes in soil-plant-atmosphere systems as a means of studying resource management and conservation in agricultural ecosystems under current or future climates.
Email: robert.grant@ualberta.ca
Phone (780) 492-6609
Office: 340B Earth Sciences Building

HACKE, Uwe. Assistant Professor. Plant physiology. Research interests: plant physiological ecology, especially subjects related to water transport and xylem structure in woody plants.
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Phone: (780) 492-8511
Office: 251 Earth Sciences Building

HAMANN, Andreas. Assistant Professor. Hardwood genetics. Research interests: effects of climate change on ecosystems; conservation and ecological genetics; breeding and deployment; tropical ecology
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Phone (780) 492-6429
Campus Location: 739 General Services Building

HE, Fangliang. Professor. Biodiversity and landscape modeling. Research interests: community ecology, species diversity, biological conservation, landscape ecology, ecological methodologies and modeling, and spatial statistics.
Email: fhe@ualberta.ca
Phone (780) 492-7575
Office: 713C General Services Building

HUDSON, Robert J. Professor. Wildlife production and management. Research interests: nutritional ecology and bioenergetics of free-ranging animals and the dynamics of natural and managed grazing systems; international wildlife projects in the Arctic and Africa.
Email: robert.hudson@ualberta.ca
Phone (780) 492-2111 or 492-8536
Office: 865 General Services Building or 214J Agriculture Forestry Building

KACHANOSKI, Gary. Professor. Soil physics. Research interests: movement of water and chemicals through agricultural and natural ecosystems.
Email: gary.kachanoski@ualberta.ca
Phone (780) 492-2355
Office: 3-34A Earth Sciences Building

KING, Jane. Professor. Physiology of Forage Crops. Research interests: Physiological adaptation of introduced and native forage species to optimize forage production and stand persistence under a range of management systems; evaluating grass legume mixtures.
Email: Jane.King@ualberta.ca
Phone (780) 492-4750
Office: 416E Agriculture Forestry Building

LIEFFERS, Victor J. Professor and NSERC Industrial Research Chair. Silviculture and forest ecology. Research interests: dynamics of boreal and mixedwood forests; tree recruitment, competitive relations and ecophysiology of

trees, shrubs and herbs; light transmission through mixed canopies.

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Phone (780) 492-2852

Office: 440 Earth Sciences Building

MACDONALD, S. Ellen, Professor. Forest ecology and plant biodiversity. Research interests: Factors influencing biodiversity of understory plant communities (vascular and non-vascular); redevelopment of understory plant communities after natural disturbance or forest harvesting.

Email: ellen.macdonald@ualberta.ca

Phone (780) 492-3070

Office: 743 General Services Building

NAETH, M. Anne, Professor. Applied ecology, reclamation, and restoration ecology. Research interests: land reclamation, revegetation, and remediation of disturbed ecosystems; restoration ecology; vegetative reclamation, conservation; plant ecology; ecology and succession in disturbed ecosystems.

Email: anne.naeth@ualberta.ca

Phone (780) 492-9539

Office: 855C General Services Building

NIELSEN, Scott, Assistant Professor. Biodiversity Conservation. Research Interests: Species distribution and habitat supply modeling; endangered species monitoring and management; conservation planning and reserve design; landscape ecology

Email: scottn@ualberta.ca

Phone (780) 492-1656

Office: 741 General Services Building

QUIDEAU, Sylvie A. Associate Professor. Soil biogeochemistry. Research interests: organic matter and microbial processes; soil-vegetation relationships; dynamic pedology.

Email: sylvie.quideau@ualberta.ca

Phone (780) 492-5397

Office: 340B Earth Sciences Building

SIDDIQUE, Tariq, Assistant Professor. Soil Chemistry – Environmental Microbiology. Research Interests: microbial transformations of heavy metals; their speciation in soil, sediment and water; and characterization of microbial populations involved in biotransformation processes; biodegradation of petroleum hydrocarbons under anaerobic conditions; metabolic pathways of hydrocarbon degradation; and molecular fingerprinting of hydrocarbon-degrading microbial communities; and pore-water chemistry and clay mineralogical properties to understand mechanisms of oil sands tailings densification.

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Phone (780) 492-2899

Office: 867 General Services Building

SILINS, Uldis, Associate Professor. Forest hydrology and watershed management. Research interests: forest evapotranspiration dynamics; eco-hydrology of forest stand dynamics, hydraulic architecture of trees, and forest disturbance effects on streamflow and water quality.

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Phone (780) 492-9083

Office: 809 General Services Building

SPENCE, John, Professor and Chair. Forest entomology, conservation and evolutionary biology. Research interests: ecosystem-based forest management; effects of natural and anthropogenic disturbances on forest invertebrate populations; forest insect pest management; biology and systematics of beetles, bugs and spiders.

Email: john.spence@ualberta.ca

Phone (780) 492-1426

Office: 751E General Services Building

TYREE, Melvin, Professor. Tree physiology. Research interests: tree water relations, effects of stress on trees and how it impacts a tree's hydraulic architecture; evolution of wood structure and on the distribution of trees in forests worldwide.

Email: mel.tyree@ualberta.ca
Phone (780) 492-5597
Office: 338B Earth Sciences Building

WOODARD, Paul M. Professor. Forest fire management and science. Research interests: historical role of fire in the southern Rocky Mountain ecosystem and white spruce regeneration after fire in the boreal forests of Alberta.
Email: paul.woodard@ualberta.ca
Phone (780) 492-2924
Office: 845 General Services Building

YEH, Francis C. Professor. Forest genetics. Research interests: tree improvement and breeding, quantitative and population genetics, forest conservation and biotechnology; evolutionary, ecological, quantitative, population, and conservation genetics.
Email: francis.yeh@ualberta.ca
Phone (780) 492-3902
Office: 701 General Services Building

ZWIAZEK, Janusz J. Professor and Associate Chair (Research Programs). Tree physiology. Research interests: effects of pollution, drought and environmental stress on tree function; stress resistance, physiological, biochemical and structural adaptations of trees to stress; structure and function of cell membranes.
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Phone (780) 492-2358
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APPLICATION AND ADMISSION

Admission Requirements

- 4-year undergraduate degree, or its academic equivalent from a recognized university
- Grade point average (GPA) of 3.0 in the last two years (*60) of undergraduate work (or graduate work) at the University of Alberta, or an equivalent qualification from a recognized institution
- All applicants whose native language is not English must obtain a TOEFL score of 550 paper-based (213 computer-based) or an equivalent score on an approved English Language examination
- Applicants must arrange for 3 letters of reference and official university transcripts to arrive before the deadline dates
- Applicants are required to prepare a brief statement of research interests or proposed graduate research project
- Applicants are encouraged to correspond with academic staff who may be suitable or desirable as potential graduate research supervisors (<http://www.ales.ualberta.ca/rr/directory.cfm>)
- A recommendation for admission will only be made once a suitable supervisor has been identified
- Exceptional PhD or MSc applicants from another university will automatically be nominated for a University of Alberta PhD or MSc scholarship (<http://www.gradstudies.ualberta.ca/awardsfunding/scholarships/recruitment/index.htm>).
- Effective 1 September 2004, a \$100 application fee will be required; fees may be waived for applicants from some countries (<http://www.gradstudies.ualberta.ca/apply/countrieswaived.htm>).

Application Deadlines

<i>April 1</i>	Deadline for applicants from People's Republic of China (PRC) for September admission.
<i>June 1</i>	Deadline for <u>applicants from foreign countries</u> (excluding PRC) for September admission.
<i>August 1</i>	Deadline for applicants from PRC for January admission.
<i>October 1</i>	Deadline for <u>applicants from foreign countries</u> (excluding PRC) for January admission.

Although the Department does not have rigid deadlines for admission for Canadian applicants, except under special circumstances, we need to have applications by July 15 and November 1 for September and January admission respectively.

Contact: rrgrads.inquiry@ualberta.ca

Classification of Graduate Students

Graduate students in the Department of Renewable Resources at the University of Alberta may be admitted into one of the following categories:

- **Qualifying Graduate Student**

Such students are those whose academic background entitles them to serious consideration for admission to graduate studies but who are considered to be inadequately prepared to enter a graduate program in the subject area they have chosen. Generally, students who hold a three-year bachelor's degree or students who have graduated from a four-year degree program, but who are entering a new field, may be admitted as qualifying graduate students. Normally, a qualifying period will not exceed 5 full course equivalents (*30) specified by the Department. Neither the courses taken nor the fees paid during a qualifying period will be credited toward a subsequent degree program. Qualifying students are not permitted to register in thesis.

- **Candidate for a Master's or PhD Degree**

Graduates who have specialized in a 4-year BSc in an appropriate area will be admitted directly to the MSc or PhD program.

- **Special Graduate Student**

Such students are those who wish to take graduate level courses for credit without proceeding toward an advanced degree at the University of Alberta. Special graduate students are not candidates for a degree at this University and will not receive any residence or fee credit toward a subsequent degree program for the work completed as a special graduate student. Upon request and approval by FGSR, a maximum of *6 of course credit may be transferred to a degree program.

- **Visiting Graduate Student**

This category is used for students who are registered in a graduate degree program at another university or college, who have obtained written permission in advance from their home and host institutions to take one or more courses for transfer of credit toward that graduate degree program. Visiting students are not permitted to register in thesis or departmental project courses.

REGISTRATION

It is the student's fundamental responsibility to 1) ensure that their registration is accurate and does not lapse, 2) submit appropriate forms to the Department for signature and processing, and 3) pay all fees required by the deadline dates set out in the Calendar in section [11](#) (active link) or Page 1 of this manual.

Maintenance of Registration

- **Course-based Programs:** Students in course-based degree programs must register in coursework or in MREG 800 Maintaining Registration (see below) for at least one term in each September to August period to keep the program active.
- **Thesis-based Programs:** In order to keep their program active, students registered in thesis-based master's and doctoral programs must register each year for both terms of Fall/Winter Session (September to April) in coursework and/or thesis research, or in MREG 800 (cannot register in MREG 800 at end of program; see below for description of 'end of program'). Students who have registered

in Fall/Winter Session and are working only on thesis research during May to August do not need to register separately for that period. To register full-time in a thesis program in Fall/Winter, students must register in a combination of course work and/or thesis research comprising a minimum of *9 each term. Students registered in <*9 in a Fall/Winter term are considered part-time students. Other registration patterns for students in exceptional circumstances will be considered by FGSR. Students who fail to keep the program active as described above will be considered to have withdrawn from their program. If they wish to resume work on the program they must apply for readmission and have their program reassessed in terms of the regulations in force at the time of reapplication. There is no guarantee of readmission. If a student is recommended for readmission, a readmission fee will be charged in addition to the fees assessed in the usual manner.

Minimum Units of Course Weight Registration Requirements

- **Thesis-Based Master's Programs:** Over the duration of their programs students in thesis-based master's programs must register and be assessed fees for a minimum of *24, which may consist of a combination of coursework and thesis research. Credit given for MREG 800 does not contribute to the minimum *24.
- **Course-Based Master's Programs:** Over the duration of their programs students in course-based master's programs must register and be assessed fees for a minimum of *30. Credit given for MREG 800 does not contribute to the minimum *30.
- **Doctoral Programs:** Over the duration of their program students in doctoral programs must register and be assessed fees for a minimum of *36, which may be comprised of a combination of coursework (where required) and thesis research. Credit given for MREG 800 does not contribute to the minimum *36.

Registration at the End of Programs

- **Course-Based Programs:** When a student in a course-based master's program completes all of the coursework and other required assignments and the Department submits a properly completed Notice of Final Completion for Course-Based Master's Degree to FGSR, the student's name will be placed onto the list for the next available convocation.
- **Thesis-Based Programs:** Students in thesis-based master's and doctoral programs must register in "Thesis" during the registration period in which the thesis and accompanying evidence of program completion is submitted to FGSR. This enables FGSR to award credit for the thesis at that time. Thesis-based programs are not recorded as complete until the thesis and accompanying documentation have been submitted to FGSR.

If the thesis is submitted **between:**

Sept 1 – Fall convocation deadline (usually Oct 1)	<ul style="list-style-type: none"> • student must be registered in Fall term • once the thesis is submitted, FGSR will change registration to THES 910 (only registration/transcript & student services fees are assessed ~ \$115)
Fall convocation deadline - 5 th business day in Jan	<ul style="list-style-type: none"> • student must be registered for Fall term • fees assessed according to the registration
5 th business day in Jan – Jan 31	<ul style="list-style-type: none"> • student must be registered in both Fall and Winter terms • once the thesis is submitted, FGSR will change the Winter registration to THES 910
Feb 1 - Spring convocation deadline (usually mid-Apr)	<ul style="list-style-type: none"> • student must be registered in both Fall and Winter terms • fees will be assessed accordingly

Spring convocation
deadline - Aug 31

- student must be registered for both terms of the previous Fall/Winter
- no registration required for the Spring/Summer period

Registration Status

A student's registration status is determined automatically by the total units of course weight (including a project or a thesis where appropriate) in which the student is registered for credit in a given term. Audited courses are not included in the calculation of registration status.

- **Full-Time Registration in Fall/Winter:** These students are registered *9 or more for credit per term and are working full time on their academic program in that term.
- **Part-Time Registration in Fall/Winter:** These students are registered less than *9 for credit per term.
- **Full-Time Registration in Spring/Summer:** These students are registered in *6 or more per term.
- **Part-Time Registration in Spring/Summer:** These students are registered in less than *6 per term.
- **MREG 800 Maintaining Registration:** Students who are not registered in any courses in a given term and are not working on their thesis or project research, but still wish to maintain their status as graduate students.

Registration Procedure

Newly admitted and continuing graduate students in degree programs register using Bear Tracks interactive web-based service. Most registration information is available from the web and registration assistance is provided by the Department Contact. Special and Visiting graduate students will be processed by FGSR. In order to register at the University of Alberta, graduate students must:

1. **Consult and receive counseling** from their supervisor and Department.
2. **Register:** once newly-admitted and continuing graduate students in degree programs have determined their program requirements in consultation with their supervisors, they register through Bear Tracks at: <https://www.beartracks.ualberta.ca/servlets/iclientservlet/uahebprd/?cmd=login>
Bear Tracks cannot be used for the following registrations:
 - a) **audited courses:** to add a courses for audit, students must complete course audit form and have it signed by instructor of the course and Graduate Coordinator and submit to FGSR for approval and processing.
 - b) **courses extra to the degree:** to designate a course as extra, students must complete Extra to Degree form, have it signed by the Graduate Coordinator and submit to FGSR for approval and processing.
 - c) **late registration or registration as extramural student:** graduate students who live >80 kms from Edmonton can be registered as extramural students. See Graduate Contact to register.
3. **Confirm registration** by viewing your timetable from Bear Tracks. Timetable and fee assessments will not be mailed to the student.

Bear Tracks provides the following information:

- Admissions
 - View application status
 - View required items
 - View application comments
 - View approved transfer dcredit
 - View admission decisions
- Registration
 - Check course listings and class schedule
 - View enrollment appointment
 - Register in courses
 - View class timetable

- Change program
- Academic Record
 - View final grades
 - View statement of results
 - View unofficial transcript
 - Request official transcript
 - View status of your request
- Other
 - Update contact information
 - View exam schedule
 - View fees assessment
 - View financial holds
 - View T2202A tax forms

Thesis Registration

Restricted to students in thesis-based graduate degree programs. Qualifying, Special, and Visiting graduate students may not register in Thesis. Effective September 2003, students who are admitted to any thesis-based program and who initially register as full-time students must register full-time for the remainder of their program. To register **full-time** in a thesis program in Fall/Winter, students must register in a combination of course work and/or thesis research comprising a minimum of the equivalent of ***9 each term**. Students registered in less than the equivalent of *9 in a Fall/Winter term are considered part-time students. Thesis sections are scheduled according to units of course weight equivalency. These thesis sections are to be used in combination with course registrations in order to achieve the correct units of course weight for registration status (i.e. full time or part time). For example, if a student registers in two *3 courses, then the addition of THES 903 would bring the registration status to full-time.

For continuing thesis-based students, FGSR has created a special **full-time reduced-fee thesis designation (THES 919)**. Registration in THES 919 will provide the student with full-time status but at a substantially lower instructional fee (\$1075.12 per term for 2008-2009) than the existing *9 thesis registration; THES 909 (\$1724.40 per term for 2007-2008). To be eligible, **doctoral** students must have been registered full-time for a minimum of **four** Fall or Winter terms; and **master's** students, for a minimum of **two** Fall or Winter terms. All applicable full-time non-instructional fees will also be assessed in addition to THES 919 fees. Students should consult with the Graduate Contact to determine if they are eligible.

Change of Registration

Students can make changes to their registration for all unrestricted courses within 10 working days after classes begin. They can drop courses, add courses, or cancel their entire registration. After the close of registration, any changes to a graduate student's registration require the approval of the Graduate Coordinator and FGSR. A Course Audit or Withdrawal form must be used for the following registration changes: 1) withdrawal from courses, 2) withdrawal from program 3) changes from credit to audit 4) changes of course section. Such changes of registration, once approved by the student's Department, must be received by FGSR no later than the deadline dates found in the Academic Schedule. No credit will be given for any course unless it is included in the student's registration. There may be academic record and fee implications for withdrawing from courses (refer to section [22.2.7 Penalties for Late Payment of Fees](#) and section [23.9.3 Registration Deadlines Implication for Records](#)).

Change of Personal Information

Personal information, such as name and address, is recorded at the time of initial application. It is the student's responsibility to inform the University of any change in this information by completing a Change of Name or Change of Address form, available from FGSR or the Registrar's Office. Alternatively, students can update their change of address directly through Bear Tracks.

Cancellation of Registration

Graduate students who wish to withdraw from courses, from a session, or from their program should complete a Withdrawal Form which must then be authorized by the Department and submitted to FGSR for approval. Students who do not properly withdraw as indicated above are not eligible for any refund of fees, nor for exemption from fees in the event that they have not been paid. Refer to section 22.2.9 for fee refund information. If, after withdrawing from a graduate program, students wish to apply again for admission, their application will be considered in the current competition for places with all other applicants.

RESPONSIBILITIES FOR GRADUATE PROGRAMS

The most important determinant of the success of a student's graduate program will be the talent and initiative shown by that student. Nevertheless, several other individuals and groups play an important role in facilitating the academic growth that will permit students to achieve their goals: FGSR, the Department (including the Graduate Contact, the Graduate Coordinator, and Graduate Committee), the supervisory committee, and the supervisor.

FGSR

FGSR bears the ultimate responsibility (and is the ultimate authority) for issues related to graduate programs. Specifically, its responsibilities include: admitting of students; setting minimum entrance requirements and minimum academic standing requirements, and ensuring that these are met; approving all changes to students' programs; approving appointment of supervisors, supervisory committees, and examining committees; submitting to the Council of the Faculty of Graduate Studies and Research for approval changes affecting policy, general and degree regulations, etc.

The Department

Although FGSR is the ultimate authority for matters relating to graduate programs, the Department plays an important role in graduate programs by

- Overseeing the supervision of graduate students enrolled in its programs.
- Serving as the chief liaison with the FGSR.
- Ensuring that the regulations and requirements of the FGSR are met.
- Developing its own customized guidelines and rules for graduate programs as long as they are consistent with the rules of FGSR, and have the approval of FGSR.
- Making recommendations to FGSR on numerous matters including admission of students, appointment of the supervisor and supervisory committee members, course and program changes, scheduling of examination dates, etc.
- Allocating GRAF funding and nominating students for awards.

The Graduate Contact (currently Amanda Brown) has a number of responsibilities including: ensuring that the web page, Graduate Program Handbook, database of graduate students, statistics, etc. are up-to-date; distributing information to students; working with supervisors to schedule exams; maintaining files; and keeping abreast of FOIPP requirements. The Graduate Coordinator (currently Peter Blenis) chairs and makes executive decisions on behalf of the Graduate Committee; and serves as the primary liaison between the Department and FGSR. The Graduate Contact and the Graduate Coordinator work together to monitor student programs and administer scholarship nominations, awards and assistantships. They also advise on, clarify, resolve problems etc. related to requirements, procedures, deadlines etc. - typically, the Graduate Contact handles the more routine issues, while those that are more complex and involve interpretation of policy are dealt with by the Graduate Coordinator.

The Graduate Committee makes recommendations on policy to the Department, provides advice to the Graduate Coordinator, and provides a pool of neutral chairs for pre-candidacy assessments, and candidacy and final exams.

The Supervisory Committee

Normally, within six months of commencement of the program, a Supervisory Committee will be named and formally approved by FGSR.

The Supervisory Committee should meet formally with the student at least once annually and should submit a brief report to the Graduate Coordinator using the Graduate Student Progress Report form.

As minimum criteria supervisors (and, normally, members of supervisory committees) must:

- be active in the general area of the student's research;
- have a tenured (or tenure track) faculty appointment in a Department relevant to the field;
- hold a degree equivalent to or higher than that for which the student is a candidate;
- demonstrate continuing scholarly or creative activity of an original nature.
- publication of research papers in refereed and other journals acceptable to the discipline;
- publication of books and/or monographs;
- publication of research findings in conference proceedings;
- peer recognition of outstanding professional practice;
- invitations to speak at conferences or at other institutions;
- editorial or refereeing responsibilities for journals;
- invitations to serve as external examiner for the PhD;
- presentations at professional society meetings or workshops;
- invitations to review grant proposals or manuscripts;
- invitations to referee requests for promotions to full professor in recognized institutions.

There are several potentially “gray” areas relating to eligibility for graduate supervision, including such categories as retired professors, adjunct professors (from inside and outside the University), colleagues from Departments that do not have a graduate program, clinical appointees, sessionals, faculty service officers (FSOs), postdoctoral fellows (PDFs), research associates, and experts from outside the University. For more information about these eligible categories, please refer to the Graduate Program Manual found at the website: <http://www.gradstudies.ualberta.ca/gradmanual/index.htm>.

Guidelines for Supervisors

Graduate student supervision is a privilege and not a right. If carried out in a proper and caring manner it involves hard work, long hours and even periods of frustration and stress. However, it can and should be one of the most rewarding of academic endeavors. In assisting a junior colleague to strive for and attain new levels of competence and self-confidence, the benefits accruing to the student and the supervisor are ultimately passed on to other colleagues, associates, clients or students who interact with them. A chain of excellence can be initiated and sustained. Because a partnership requires contributions from both parties, the responsibilities of the supervisor and the student must be recognized. The criteria for supervisors are listed above, under "the supervisory committee".

At the time students commence a graduate program in the Department of Renewable Resources, they are assigned a supervisor. The Supervisor, with the support of the home Department, should:

- provide an environment for the student that is conducive to research and in which the student can grow intellectually;
- provide appropriate guidance to the student on the nature of research and the standard expected, and be accessible to give advice and constructive feedback; at the beginning of the supervisory relationship, the student should be made aware of the normal expectations held by the supervisor and the Department;

- with the student, establish a realistic timetable for completion of various phases of the program;
- consider a graduate student as a “junior colleague in research;”
- ensure that there are sufficient material and supervisory resources for each graduate student under supervision;
- work with the student to establish the supervisory committee as soon as possible after the start of the program and ensure that it maintains contact and formally meets at least once a year with the student;
- when going on leave or an extended period of absence, ensure that the student is adequately supervised by the provision of an acting supervisor (who should be a member of the supervisory committee);
- ensure that the student is aware of his/her responsibilities (as listed below) and, when necessary, assist the student in meeting these;
- set up committee meetings and examinations after consultation and with full knowledge of the student;
- assist in ensuring that the student is aware of all program requirements, degree regulations and general regulations of the Department and FGSR;
- assist in developing a program of studies for the student and guide the student in developing a sound project proposal;
- monitor the student’s progress in courses and research;
- ensure that students conduct their research in a manner that is as effective, safe and as productive as is possible;
- arrange for and attend all supervisory committee meetings and oral examinations, ensuring that these are scheduled and held in accordance with FGSR regulations;
- review the thesis both in draft and final forms.

Guidelines for Graduate Students

The responsibility for producing an acceptable thesis ultimately rests with the graduate student. It is expected that graduate students will take the initiative in designing and implementing their research projects. If funding for a student's project comes from an outside agency, that relationship may impose some constraints on the research topic. In such instances, the supervisor must assure that there is adequate flexibility to permit the student to explore their own ideas. In the case of the PhD, it is critical that the student be able to demonstrate the ability to work independently. "The essential requirement for the doctorate is the planning and carrying out of research of high quality leading to an advance in knowledge in the candidate's field of study." In the case of the Masters degree, "the thesis should reveal that the candidate is able to work in a scholarly manner and is acquainted with the principal works published on the subject of the thesis." Although Masters students are not required to demonstrate the same level of strategic thinking in formulating research problems and the identifying specific questions as PhD students, they should be able to identify the appropriate tactics for accomplishing those strategic goals.

Graduate students should:

- Take responsibility for their graduate programs. They are expected to read the Calendar and any other relevant documents to become familiar with all regulations and deadlines relating to their programs. The students’ fundamental responsibilities include ensuring that their registration is accurate and does not lapse, submitting appropriate forms to the Department for signature and processing, and paying all fees required by the deadline dates set out in the Calendar.
- maintain open communication with their supervisor and Graduate Coordinator concerning any problem either real or perceived;
- inform the supervisor regularly about progress, and provide the supervisor with an annual report for distribution to the supervisory committee;
- make research results accessible (beyond their appearance in a thesis) to an appropriate audience, especially through presentations at conferences and by submission of manuscripts to appropriate peer reviewed journals;
- be aware of deadlines for possible scholarship applications, and to seek advice and assistance from the Department in making applications.

DEPARTMENTAL REQUIREMENTS

Academic Standings

Regardless of a student's category, the pass mark in any course taken for credit is a grade of C+. In order to remain in a graduate program in Renewable Resources, a student must maintain a minimum cumulative grade point average of 3.0 with no grade less than C+. If a current student fails to maintain a satisfactory GPA, the Department will submit a Change of Category or Academic Standing form to the FGSR for approval, detailing conditions of the probation. If approved, a comment of "On Academic Probation" is added to the student record and reflected on the student's transcript. Once the student has satisfied the conditions of probationary period, the department will recommend that probation be cleared. If approved, a comment of "Cleared Academic Probation" is added to the student record and reflected on the student's transcript.

Renewable Resources Graduate Seminar Courses (REN R 603 and 604)

The Department offers two graduate seminar courses, REN R 603, Graduate Research Skills, in the Fall term and REN R 604, Graduate Research Seminar, in the Winter term. In REN R 603, lectures are used to provide students with knowledge of professionalism, research skills, and communication in a research environment. The students are evaluated on the basis of an examination given at the end of the term. In REN R 604, the students are given the opportunity to apply some of what they learned in the lectures as they are required to give a seminar, to moderate a seminar, to present a poster, and to provide a constructive critique of another student's seminar. If possible, REN R 603 should be taken as early in the student's program as possible, and REN R 604 should be taken later in the program so that the student has some research results to present in the seminar and poster session. A very important aspect of REN R 604 is the exposure that students get to the wide variety of research that takes place in this department. Students are evaluated based on their performance on each of the required elements. REN R 604 is a crucial part of graduate student education in this department. No exemptions for oral or poster presentations at conferences will be given. However, students are welcome to present talks or posters that they have given at conferences in REN R 604. The exposure to the depth and breadth of research done in Renewable Resources is an important part of graduate education in this department. Attendance at the seminars and poster session is required.

Exit Seminar

As part of the degree requirement, students are required to orally (ie not electronically) present a thesis seminar at the time of thesis completion. The seminar is normally presented just preceding the final oral examination.

Academic Integrity and Ethics Training Requirement

All students who begin their program on or after **September 2004** will be required to complete mandatory ethics training in order to convocate.

For students in the Department of Renewable Resources there are two components:

1. Completion of REN R 603. This course has been modified to include the equivalent of three hours of ethics training.
2. Completion of the Graduate Ethics Training (GET) Program, a web-based course offered by the FGSR, equivalent to five hours of training. General information about the ethics training component is posted on the FGSR website at:
<http://www.gradstudies.ualberta.ca/degreesuperv/ethics/index.htm>

Once students have completed RENR 603 and the GET WebCT course (and submitted the appropriate summary to the Graduate Contact), a Completion of Academic Integrity and Ethics Training Component form will be forwarded by the Department to FGSR. This action will ensure that the student's transcript bears a notation indicating that they have successfully completed ethics training.

Thesis Regulations

A decision about degree designation of field of study should be made early in the student's program and must be made official by the Supervisory Committee at the time the final oral examination is scheduled. If a field of study is not desired, the degree will be listed with the Department name only.

- **Thesis Format**

Students should include a short title for the thesis spine label when the thesis is submitted to the committee. Committees are reminded to scrutinize the abstract very carefully because it is the most widely read part of a thesis. It is the responsibility of the student and the Supervisory Committee to be familiar with all regulations of FGSR with respect to theses, including the regulations governing format, pagination, margins and paper quality, and to ensure that the quality of typing and reproduction meet Faculty standards. The FGSR office will inspect theses for correct form before the student submits the thesis for printing and binding. Details on the paper-format of the thesis are available from FGSR website: <http://www.gradstudies.ualberta.ca/degreesuperv/thesis/prepare.htm>. The Department endorses the concept of a thesis comprised of papers for publication both for MSc and PhD degrees. The papers may be in any stage along the publication route at the time of the final oral thesis examination. Such theses should be introduced with a literature review leading to the overall study, followed by the research paper/papers and concluding with a comprehensive synthesis arising from the research and including overall conclusions. Format of the MAg Research Paper is normally prepared in the same manner as the MSc thesis but variations are possible. A title page and approval page are also required. Graduate theses are housed in the JD Newton Conference Room in 442B ESB and in the meeting room in 760 GSB.

- **Thesis Costs**

The student is responsible for the costs of typing, production, photographs, and other illustrative material for the thesis copies required by FGSR regulations.

- **4 bound copies of the final thesis are required**

1 copy for the University Library; 2 copies for Department Reading Rooms (Department will pay for binding of one copy); 1 copy for supervisor. Please note that Renewable Resources MSc theses and MAg research papers are bound in green buckram and PhD thesis in red buckram.

- **Procedure for thesis submission:**

1. Bring 4 unbound copies of the thesis to FGSR by the deadline for convocation. The theses will be inspected briefly by FGSR staff. Students will be asked to complete three forms for convocation, "University of Alberta Library Release", "Non-exclusive Licence to Reproduce Theses" and "Graduating Student Information". Students will also be given a copy of the "U of A Graduate Studies Survey" to complete and return. One unbound copy of the thesis will be retained by FGSR, and after convocation will be sent for microfilming to the National Library of Canada in Ottawa. The remaining copies will be returned immediately to the student.
2. Pay the microfilming fee at the Cashier, Financial Services.
3. Take the remaining 3 copies to McCallum Printing Group, Room TB-29 in Tory Bldg to be bound. Pay binding fees. Department will pay for binding one copy and have the Graduate Contact approve McCallum requisition. Student pays for binding of remaining copies. McCallum will forward one bound copy of the thesis to the University's Bruce Peel Special Collections Library and will forward the 2 remaining bound copies to the Department.
4. In order to be placed on the Convocation List, it is the student's responsibility to return to FGSR with a copy of the Thesis Binding and Microfilming Payment form.

In order to obtain the degree at the earliest Convocation following the completion of the final thesis examination, the student must have submitted approved unbound copies of the thesis to FGSR on or before

a date set by the Faculty to allow enough time for the student's name to appear in the Convocation program. The student should check the current Calendar to determine the submission date for the desired convocation.

General Guidelines for Oral Exams

All pre-candidacy assessments, Candidacy, and Final Oral Exams will normally be chaired by a neutral member of the Department of Renewable Resources Graduate Committee. It is the role of the Examining Chair to:

- ensure that the questioning is rigorous, yet fair;
- moderate the exam and regulate the time for questioning;
- facilitate a consensus on the exam outcome;
- ensure that the examination is carried out according to Departmental regulations and the rules of the Faculty of Graduate Studies and Research.

After convening, the examining committee reviews the student's record, decides upon the order of examiners for questioning, and reviews the procedures for the exam. Students should be present during this discussion. The general rule will be to start with 'outside' examiners (or those least familiar with the student) first, with the supervisor going last. Requests from students regarding a preference for order of questioning will be seriously considered.

For Candidacy exams, MAg, MSc, and PhD Final Oral exams, the student presents a short oral summary of their research (10-15 minutes) unless a seminar has been presented just before the examination. Examiners will then pose questions, in turn, for 15 to 20 minutes each. External examiners (outside the University or those who were not members of the supervisory committee) will be given extra time as they desire. There will then be a second round of questions with the same order of examiners. Interruptions by other examiners with related or follow-up questions will be allowed. At the conclusion of questioning, the student will be given the opportunity to clarify any answers to questions or points of discussion. It is entirely appropriate for the student to decline this opportunity.

The chair may pose questions if he/she so desires. In some cases the chair may also be serving as a fully-enfranchised examiner. At the request of the student or any of the examiners, or at their discretion, the chair may initiate a break in the proceedings.

The student will be excused while the examining committee deliberates on the outcome of the exam. The student will be informed of the outcome immediately following the exam. At the completion of the exam the Chair completes the appropriate paperwork Notice and Outcome of Doctoral Pre-Candidacy Assessment Committee, Report of Completion of Candidacy or Final Oral Examination (MSc, PhD, Candidacy exams), Report of Final Completion of Course-based Master's (for MAg and MF exams).

GRADUATE DEGREE PROGRAMS

Master of Science (MSc)

Program Requirements

Course requirements for the MSc are based on the student's previous training and the anticipated needs in the student's area of specialization. Minimum requirements are REN R 603 (Graduate Research Skills) and REN R 604 (Graduate Research Seminar) plus *12 of course weight acceptable for graduate credit of which *6 must be at the 500 level or above. 400-level courses are acceptable for graduate credit with the approval of the supervisory committee; 300 (or lower)-level courses may be required as part of a student's program but will not count towards the *12 requirement. Under exceptional circumstances, the Graduate Committee may recommend to FGSR that 300-level courses count towards the *12 requirement. [The final authority on whether a 300-level course would count for graduate credit would rest with FGSR]. Course work should include at least *3 in research methods, statistics, and/or experimental design. Courses may

be drawn from those listed for the Department, and from other Departments within the University. For students entering the MSc program with a previous Master's degree, the *12 requirement may be waived or modified at the discretion of the supervisory committee. In addition, candidates for the degree of MSc must prepare an acceptable thesis presenting results of research conducted. The thesis should reveal that the candidate is able to work in a scholarly manner and is acquainted with the principal works published on the subject of the thesis. As far as possible, it should be an original contribution. Over the duration of their programs, students in thesis-based master's programs must register and be assessed fees for a minimum of *24, which may consist of a combination of coursework and thesis research. Candidates will be examined orally on their thesis results by an examining committee. The minimum period of residence is two, four-month terms of full-time attendance at the University of Alberta.

Length of Program

Normally, at least two academic years plus one summer of research are required to complete the MSc. Candidates must complete all the requirements within **four** years of the term in which they first register as probationary graduate students or as candidates in the master's program.

Supervisory Committee

MSc supervisory committee will normally consist of **at least two tenure-stream faculty members** (FTEs or full-time equivalents). Adjunct Professors (pending approval by FGSR) may serve on supervisory committees but they will not count as one of the minimum number of FTEs required by FGSR at the final oral exam.

MSc Final Examination Guidelines

Exam time lines

At least 3 weeks prior to the final oral examination, it is the responsibility of the Department to:

- complete and submit to FGSR a Notice and Approval of Master's Final Oral Examining Committee form
- notify the examiners of the examination date

It is the responsibility of the student to:

- supply examiners, including the examination chair, with a copy of the thesis so that they may have adequate time to appraise the thesis.

Examining Committee

MSc final oral examining committee shall consist of the supervisory committee plus one additional member.

- Minimum of **three** tenure-stream faculty members (FTEs)
- At least one from outside the Department
- All members must attend the examination
- Must be chaired by a faculty member from inside the Department

It is the responsibility of the supervisor to ensure that:

- proper arrangements are made for the candidate's examination
- the exam is scheduled and held in accordance with FGSR regulations
- the candidate is not required to make these arrangements

Thesis research seminar

All students completing the MSc program are required to deliver a seminar presenting their thesis research prior to the thesis defense. The seminar should be presented within two months of the final oral exam. Normally, the seminar is presented just before the final oral exam so that all supervisory committee members are able to attend. Contact the Graduate Contact for scheduling rooms for the seminar, and distributing the seminar announcement.

Exam outcome

The decision of the examining committee will be based both on the content of the thesis and on the candidate's ability to defend it. Normally, if all but one member of the committee agree on a decision, the decision shall be that of the majority and the dissenting committee member does not have to sign the thesis. If two or more dissenting votes are recorded, the Department will refer the matter to the Associate Dean, FGSR, who will determine an appropriate course of action. Possible outcomes:

- **Pass:** Thesis is approved as is. All examining committee members sign the signature page immediately. The Department completes a Report of Completion of Final Oral Examination form and submits it to FGSR.
- **Pass subject to revisions:** The student has satisfactorily defended the thesis but the revisions to the thesis are sufficiently minor that it will not require a reconvening of the examining committee. The Department completes a Report of Completion of Final Oral Examination form and submits it to FGSR. Normally all members sign immediately, except the committee chair or supervisor, although some examiners may wish to see specific changes before signing. These changes should be checked and approved by the supervisor, who does not sign the thesis until the required changes are satisfactorily completed.
- **Adjourned:**
The final oral examination should be adjourned in the following situations:
 - The revisions are sufficiently substantial (if further research or experimentation or major reworking of sections are required, or if the committee is not satisfied with the general presentation of the thesis) that a reconvening of the examining committee is required.
 - The committee is dissatisfied with the candidate's oral presentation and defense of the thesis, even if the thesis itself is acceptable with or without minor revisions.

If the examination is adjourned, the committee should:

- Specify in writing to the student, with as much precision as possible, the nature of the deficiencies and extent of the revisions to the thesis required. Where the oral defense is unsatisfactory, it may be necessary to arrange some discussion periods with the candidate prior to reconvening the examination.
 - Decide upon a date to reconvene. If the date of the reconvened oral examination depends upon the completion of a research task or a series of discussions, it should be made clear which committee members will decide on the appropriate date to reconvene. The final date set for reconvening shall be no later than six months from the date of the examination. A final decision of the examining committee must be made within six months of the initial examination.
 - Make it clear to the student what will be required by way of approval before the examination is reconvened. (e.g. approval of the committee chair or supervisor, approval of the entire committee, or of select members of the committee).
 - Specify the supervision and assistance the student may expect from the committee members in meeting the necessary revisions.
 - Advise FGSR in writing of the adjournment and the conditions.
 - When the date is set for the adjourned final oral examination, the department will notify the FGSR. Normally the Dean, Associate Dean or Pro Dean attends the examination.
- **Fail:** If the committee agrees that the student has failed, no committee member signs the signature page. The committee chair shall provide the reasons for this recommendation and Department's recommendation for the student's program in writing to the Associate Dean, FGSR and to the student. The Associate Dean will arrange to meet with the candidate and with Department representatives before acting upon any Department recommendation. A decision of FGSR which affects a student's academic standing (i.e. required to withdraw) is appealable.

There is no provision for a final oral examination to be "accepted subject to major revisions".

Doctor of Philosophy (PhD)

Program Requirements

Course requirements for the PhD will be based on the student's previous training and anticipated needs in the student's area of specialization, the total course load being at the discretion of the student's supervisory committee. All students in the PhD program must take REN R 603 & 604 (Graduate Research Seminar) unless they have completed REN R 600 as part of a previous degree. Otherwise there is no fixed minimum course requirement for students who hold a master's degree. Students entering the PhD program, who do not have a master's degree, will be expected to complete at least *12 of graduate credit (at least *6 must be at the 500 level or above), including at least *3 in research methods, statistics, and/or experimental design, in addition to REN R 603 & 604. See the section on Program Requirements for Master of Science students for details on the acceptability of courses for graduate credit. Students in the PhD program must complete an oral pre-candidacy assessment within six months of registration and pass an oral candidacy exam, supervised by a committee formed according to FGSR regulations within two years of initial registration. All candidates for the PhD must prepare an acceptable thesis presenting the results of their research. A doctoral thesis must embody the results of original investigations and analyses and be of such quality as to merit publication, meeting the standards of reputable scholarly publications; furthermore, it must constitute a substantial contribution to the knowledge of the candidate's field of study. Candidates will be examined orally on their thesis results. The minimum residence requirements are three academic years of study and research for a student with a bachelor's degree, and two academic years of study and research for those with a master's degree.

Residence supports two important objectives:

- (1) A doctoral program provides students with significant contact with the University of Alberta, through time spent on campus and through interactions with the faculty and graduate students at the University.
- (2) A doctoral program educates the student as an independent researcher and scholar in an academic discipline, through activities such as course work, participating in seminars, involvement in teaching, interactions with faculty members and other graduate students, and research under the direction of a faculty member.

Supervisory Committee

PhD supervisory committees will consist of:

- a minimum of three individuals who will be tenure-stream faculty members (FTEs);
- where appropriate, one or more committee members may be from a Department other than the student's home department.

They may include one or more Adjunct Professors (pending approval by FGSR) but these persons will not count as one of the minimum number required by FGSR for the Candidacy and Final Oral Exam. No later than the end of the first year of the student's doctoral program, and well in advance of the candidacy examination, the Graduate Coordinator shall recommend the names of the supervisory committee members to FGSR.

Length of program

The time required to complete the PhD will vary according to the previous training of the applicant and the nature of the research undertaken; however, a minimum of three years is normally required. Candidates must complete all the requirements within **six** years of the term in which they first register in the program. In the case of master's students who are reclassified as candidates for a doctoral degree, all degree requirements must be completed within six years of the time they first register as a master's student, not including any time spent as a qualifying graduate student.

Pre-Candidacy Assessment Guidelines

Timing: The Pre-Candidacy assessment should be held within six months of first registration in the PhD program.

Focus, purpose and areas for questioning: The purpose of the Pre-Candidacy assessment is to provide an early assessment of the student's knowledge (general and discipline specific) in order to determine if the student has adequate background to undertake research at the PhD level. As the primary focus of the pre-candidacy assessment is the student's knowledge and background, the exam will not consider broader areas of conceptual or synthetic thinking ability as these are the focus of the candidacy exam. Collectively, the pre-candidacy assessment and the candidacy exam will determine if the student has the potential to complete research at the PhD level. For the pre-candidacy assessment, the student in conjunction with the supervisor, will identify a minimum of four broadly defined subject areas relevant to the field of study chosen by the supervisor. The narrowest level of focus for these subject areas would be coincident with 400 level course offerings as the underpinning for the field of study. A broad, knowledge-focused range of questioning is expected for each of the subject areas identified. The student is expected to demonstrate solid senior undergraduate level knowledge in each subject area.

Relationship between the Pre-Candidacy and Candidacy exams: The Pre-Candidacy evaluates the student's basic factual knowledge of the subject matter that underlies the discipline(s) being researched. The standard of competency required for a satisfactory performance at this point is fairly low, viz. "solid senior undergraduate level knowledge". More is expected during the Candidacy exam, when there must be demonstrated: a deeper understanding of the discipline; an adequate working knowledge of experimental design and statistics; familiarity with scientific inquiry, the scientific method, and philosophy and science; and the ability to think creatively and critically. At the Candidacy, the examining committee has to determine whether the student possesses "the ability to pursue and complete original research at an advanced level".

For the Pre-Candidacy, examiners are likely to ask a large number of fairly simple questions to determine the breadth and boundaries of the student's knowledge. In contrast, during the Candidacy exam, examiners are more likely to ask fewer questions, to gauge the student's depth of knowledge and cognitive abilities. The table below gives some idea of the types of questions that might be posed during these two different kinds of exams.

Pre-Candidacy	Candidacy
Define "P value"	If the output from a computer program specifies a P value to four decimal places, is that the exact value of the probability, or does four decimal places overstate the accuracy of the estimated probability?
Define "type I error"	Will increasing sample size: decrease the probability of a type I error, decrease the probability of a type II error, decrease both probabilities, decrease neither probability? Why?
Why do we use multiple comparison techniques?	Under what circumstances are we more concerned with a type one error and under what circumstances are we more concerned with a type two error?
What statistical technique can be used to determine the association between an independent variable and a dependent variable when both are quantitative?	Distinguish between regression and correlation in terms of purpose, parameters estimated, and sampling strategies.
Distinguish between deductive and inductive reasoning	Comment on the following: "inductive inferences are synthetic but never certain and hence of little value; deductive inferences, although certain, are tautological, and hence of even less value".

Assessment Committee: The committee shall consist of: no fewer than four committee members:

- the supervisory committee
- plus any additional members, approved by the Graduate Coordinator, needed to bring the assessment committee to a minimum of four members.

The supervisor should submit recommendations for the additional member(s) to the Graduate Coordinator for approval at least three weeks prior to the assessment date. The submission should indicate the student's general subject area and the four relevant subject areas for questioning. The Graduate Coordinator may revise the indicated subject areas to meet the intent of broad assessment of scientific knowledge in the pre-candidacy assessment. Scheduling is the responsibility of the supervisor.

Structure: The assessment will be chaired by a faculty member who is not the supervisor, and is normally a member of the Graduate Committee. The assessment will be conducted in accordance with the General Guidelines for Oral Exams. The chair is responsible for moderating the discussion and directing questions and may participate in the questioning. If the chair is not a member of the assessment committee, the chair does not vote. It is the chair's responsibility to ensure that departmental and FGSR regulations are followed.

Outcome: There must be a majority decision. The outcome will be one of the following:

- **Satisfactory** - proceed to Candidacy exam;
- **Unsatisfactory** - student advised that they are unlikely to successfully pass the subsequent Candidacy examination with the scientific knowledge and/or communication proficiency demonstrated during the Pre-Candidacy assessment. There is no provision for re-assessment of the student for the Pre-Candidacy assessment.

Irrespective of whether the performance is satisfactory or unsatisfactory, the student shall be provided with:

- A statement of their strengths and weaknesses.
- Suggestions for addressing weaknesses. This could include recommendations for coursework or alternative approaches to remediating deficiencies in addition to, or in lieu of, coursework.
- A frank prognosis of the likelihood of successful completion of the PhD program. This could include "the student is on track"; "the student shows good cognitive ability but has deficiencies of knowledge in some areas that need to be addressed"; "the performance was unsatisfactory, and similar performance at the Candidacy will likely lead to termination of the program"; "successful completion of the PhD is unlikely and the student should consider withdrawing from the program".

Candidacy Exam Guidelines

Timing: The candidacy exam will be held within two years of first registration in the PhD program or within one year of switching from the MSc to the PhD.

Preparation for Candidacy Examinations:

The following suggestions come from graduate students and academic staff members in the Department. Staff and students agree that most of the responsibility for preparation rests with the student to read and study appropriate material based on the research they wish to pursue, to meet with members of the examining committee, and to practice answering questions with other students. There is a range of opinions about how much supervisors will or should assist with this preparation and therefore students are advised to discuss expectations for the candidacy exam with their supervisor and/or the Graduate Coordinator.

Dates of Candidacy Examinations are determined between the student, the supervisor, and the supervisory committee. They should be set at least 3 weeks in advance of the examination to provide ample opportunity for preparation.

Ways of preparing for the candidacy exam include:

- **Preparing a candidacy report/research proposal.** Students are required to prepare a brief outline of their thesis research. As well as requiring the student to review the direction of their research, this helps examiners identify subject matter that the student should have mastered.
- **The taking of courses.** Ideally, graduate-level courses should have provided in-depth treatment of subject matter relevant to the student's area of interest. In addition, such courses should have fostered critical thinking ability.
- **Consulting with examiners.** Students may wish to ask examiners about the general areas in which they are likely to be questioned. Most examiners are willing to indicate, at least in general terms, what they expect the student to have mastered and may provide suggested readings from journals or textbooks.
- **Holding mock candidacy examinations.** These, together with the pre-candidacy, give the student some sense of what the candidacy will be like. Mock examinations are usually organized and held with other graduate students, although some supervisors may organize and participate themselves. The questions asked during the actual candidacy exam will certainly not be the same as those posed during mock examinations, but mock examinations can give the student practice in answering questions in front of an audience.
- **Understanding the examination process.** Conversations with the supervisor, committee members (including the chair) and the Graduate Coordinator can help reduce the mystery surrounding the examination. The student should understand how the examination will be conducted, and the possible examination outcomes.

Focus, purpose and areas for questioning: According to the regulations of FGSR in the candidacy exam, students must demonstrate to the satisfaction of the examining committee that they possess: 1) an adequate knowledge of the discipline and of the subject matter relevant to the thesis and 2) the ability to pursue and complete original research at an advanced level.

Prior to the candidacy exam, each student should have declared their area of focus relevant to the discipline and subject matter of the thesis. This should include the general subject area and the specific discipline (eg. forest biology & management - boreal mixedwood silviculture). This will help define the areas for questioning in the exam. During the candidacy examination only minor attention should be given to the data collection. The exam should determine whether the student is adequately prepared to continue as a doctoral student.

Examining Committee: The examining committee shall consist of:

- **five** (tenure-stream) faculty members (FTEs):
- the supervisory committee plus two other faculty members
- at least one member from outside the Department.
- must have a minimum of two arm's length members who come new to the examination

The supervisory committee's recommendations for additional members should be submitted by the supervisor to the Graduate Coordinator for approval at least three weeks prior to the exam date. It is the responsibility of the supervisor to schedule the exam.

Prior to the exam date: The student must prepare a *curriculum vitae* and a brief outline of their thesis research. The latter should be 5 - 10 pages in length and include purpose, background, approach (including methods), and progress. These two items must be provided to all members of the examining committee at least one week prior to the exam. The purpose is to provide examiners with information on the student's background, give them an understanding of the thesis research, and provide the opportunity for an assessment of the student's ability to communicate in written form.

Exam Structure: The exam will be chaired by a member of the departmental Graduate Committee and will be conducted in accordance with the General Guidelines for Oral Exams. At the start of the exam the student will deliver a brief (15 min) oral presentation outlining the area of their thesis research and their progress to date. This will support the student's written research report and will allow the committee to

observe the performance of the student in an oral presentation of their research. Since the candidacy exam is designed to assess the student's knowledge of their discipline and subject matter relevant to the thesis, it is natural that questions will arise out of the presentation.

Exam outcome: Normally, if all but one member of the committee agree on a decision, the decision shall be that of the majority. If two or more dissenting votes are recorded, the Department will refer the matter to the Associate Dean, FGSR, who will determine an appropriate course of action. The exam outcome will be one of the following:

- **Pass** - Performance was exemplary/acceptable; the Department shall complete a Recommendation for Change of Category form and submit to FGSR. Upon receipt, FGSR will add a comment 'Doctoral Candidacy Exam Completed' to the student record, which will be reflected on the student's transcript.
- **Conditional Pass** - Performance was weak. Specific conditions need to be met for the student to continue with his/her program. Some of the possible recommendations regarding conditions include: course work, additional reading, refinement and defense of thesis proposal, re-examination by individual committee members. The Chair of the examining committee shall provide in writing to the Associate Dean, FGSR and the student:
 - the reasons for this recommendation
 - details of the conditions
 - timeframe for the student to meet the conditions
 - the approval mechanism for meeting the conditions, i.e. approval of the committee chair or supervisor, or approval of the entire committee, or select members of the committee
 - the supervision and assistance the student can be expected to receive from committee members
- **Fail** – If the examining committee agrees that the student has failed, the committee chair shall provide the reasons for this recommendation and the Department's recommendation for the student's program in writing to the Associate Dean, FGSR, and to the student. The following three options are to be considered by the examining committee when the outcome of a student's candidacy exam is "fail".
 1. **Repeat the Candidacy:** If the student's candidacy exam performance was inadequate but the student's performance and work completed to date indicate that the student has the potential to perform at the doctoral level, the examining committee should consider the possibility of recommending that the student be given an opportunity to repeat the candidacy exam. The student shall be notified in writing of his/her exam deficiencies by the Chair of the examining committee. The second candidacy exam is to be scheduled no later than 3 to 6 months from the date of the first candidacy. In the event that the student fails the second candidacy, the examining committee shall recommend option 2 or 3 below.
 2. **Change of category to a Master's Program:** If the student's candidacy exam performance was inadequate and the student's performance and work completed to date indicates that the student has the potential to complete a Master's program, the Examining Committee should consider the possibility of recommending a Change of Category to a Master's Program.
 3. **Termination of the Doctoral Program:** If the student's performance was inadequate and the work completed during the program is considered inadequate, the examining committee should recommend termination of the student's program.

PhD Final Examination Guidelines

Preliminary acceptance of the thesis: Before the thesis is forwarded to the external examiner, PhD supervisory committee members shall declare in writing to the supervisor that either the thesis is of adequate substance (and quality) to warrant that the student proceed to the final examination or that the thesis is unsatisfactory and the student should not be allowed to proceed to the final oral examination. This process is critical to protect and uphold the reputation of the Department and the University of Alberta for excellence in graduate programs. It is also critical to ensure that external examiners and other additional

members of the examining committee are not asked to invest time reading a thesis that is substandard. Before the date of the final examination is set and the external examiner invited, a completed Preliminary Acceptance of Thesis form shall be given to the Graduate Contact.

Final Examining Committee: The examining committee shall consist of:

- the supervisory committee and at least two other faculty members
- at least one must be from outside the Department (Internal/External)
- external examiner/reader from outside the University
- one additional arm's length member who comes new to the examination (but may have served on the Candidacy examining committee)
- at least **five** examiners shall be **in attendance** at the examination; minimum of **five** FTE's (if the external examiner is attending the exam in-person or by teleconference call, they will count as one FTE, therefore only **four** FTEs need be in attendance).

The external examiner should be a recognized authority in the student's disciplinary area and an **experienced supervisor of doctoral students**. The proposed external examiner must be in a position to review the thesis objectively and to provide a critical analysis of the work and the presentation. It is therefore essential that the external examiner not have a current or previous association with the student, the supervisor, or the Department that would hinder this type of objective analysis. For example, a proposed examiner who has recently been associated with the student as a research collaborator or co-author would not be eligible. A proposed external examiner must not have had recent association with the doctoral candidate's supervisor (as a former student, supervisor, or close collaborator, for instance). A proposed external examiner should not normally be nominated more frequently than once every two years. External examiners are nominated by the Department and approved and invited by FGSR. Supervisors who are in doubt about the eligibility of a potential external examiner are urged to call the Associate Dean in FGSR to review the case before approaching the external. The external should not be contacting the supervisor directly regarding the thesis or making arrangements related to the examination

Report of the External Reader (when the external does not attend the oral): In the letter of invitation sent to the external reader by the FGSR, the external reader is requested to provide to the graduate coordinator in the department and the FGSR, at least one week in advance of the examination, a written evaluation of the thesis, including the following items:

- a statement that the thesis is acceptable for the doctoral degree
- either a brief, written commentary on the scope, structure, methodology and findings of the thesis, which can be read to the candidate for response, or
- a list of clear, direct contextualized questions (preferably no more than five) for the candidate to address during the examination,
- a list of minor corrections (if any).

The chair will present the external's report and questions to the student for the first time during the examination and the committee will evaluate the student's answers as part of the examination.

Report of the External Examiner (When the external examiner attends the oral exam):

Once the external examiner is approved by FGSR, a letter of invitation will be mailed to the external asking that the thesis be temporarily placed in one of the following categories:

- the thesis is acceptable with minor or no revisions
- the external wishes to reserve judgment until after the examination
- the thesis is unacceptable without major revisions.

If the thesis is judged by the external to fall into the last category, the external is asked to contact the Associate Dean, FGSR immediately, since the final examination may have to be postponed.

An external attending the exam is asked to prepare and send to the Graduate Coordinator, at least one week in advance of the examination, a brief written commentary (approximately 2-3 pages) on the structure, methodology, and findings of the thesis, for the reference of both the candidate and supervisor. The commentary should not be given to the student prior to the examination.

Exam time lines: At least **three weeks** in advance of the final oral examination, it is the responsibility of the Department to recommend the committee members and forward their names to the FGSR for approval, however, the request for the external examiner shall normally be **two months** prior to the examination. The external examiner shall receive the thesis from the Department at least **four weeks** before the examination. The Department must notify the examiners of the examination date and should supply them with a copy of the thesis at least **three weeks** in advance, so that they may have adequate time to appraise the thesis.

The final oral examination shall be chaired by a faculty member who is not the supervisor but is a member of the student's home Department. Normally, this will be a member of the Graduate Committee. The chair of the exam is responsible for moderating the discussion and directing questions and may participate in the questioning. If the chair is not a member of the committee, the chair does not vote or sign the thesis. It is the chair's responsibility to ensure that departmental and Faculty regulations relating to final oral examinations are followed. The student should provide a copy of the thesis to the chair of the exam prior to the exam date.

Final Oral Examination: A final oral examination, based largely on the thesis, shall be conducted by the examining committee. The final oral examination is arranged by the supervisor, and not the student. The supervisor shall ensure that it is scheduled and held in accordance with FGSR regulations.

Exam outcome:

- **Pass:** Thesis is approved as is. All 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). The Department completes a Report of Completion of Final Oral Examination form and submits it to FGSR.
- **Pass subject to revisions:** The student has satisfactorily defended the thesis but the revisions to the thesis are sufficiently minor that it will not require a reconvening of the examining committee. The Department completes a Report of Completion of Final Oral Examination form and submits it to FGSR. Normally all members sign immediately, except the committee chair or supervisor, although some examiners may wish to see specific changes before signing. These changes should be checked and approved by the supervisor, who does not sign the thesis until the required changes are satisfactorily completed.
- **Adjourned:**
The final oral examination should be adjourned in the following situations:
 - The revisions are sufficiently substantial, (if further research or experimentation or major reworking of sections are required, or if the committee is not satisfied with the general presentation of the thesis) that it will require a reconvening of the examining committee.
 - The committee is dissatisfied with the candidate's oral presentation and defense of the thesis, even if the thesis itself is acceptable with or without minor revisions.

If the examination is adjourned, the committee shall:

- Specify in writing to the student, with as much precision as possible, the nature of the deficiencies and extent of the revisions to the thesis required. Where the oral defense is unsatisfactory, it may be necessary to arrange some discussion periods with the candidate prior to reconvening the examination.
- Decide upon a date to reconvene. If the date of the reconvened oral examination depends upon the completion of a research task or a series of discussions, it should be made clear which committee members will decide on the appropriate date to reconvene. The final date set for reconvening shall be no later than six months from the date of the examination. A final decision of the examining committee must be made within six months of the initial examination.
- Make it clear to the student what will be required by way of approval before the examination is reconvened. (e.g. approval of the committee chair or supervisor, approval of the entire committee, or of select members of the committee).

- Specify the supervision and assistance the student may expect from the committee members in meeting the necessary revisions.
- Advise FGSR in writing of the adjournment and the conditions.
- When the date is set for an adjourned final oral examination, the department will notify the FGSR. Normally the Dean, Associate Dean or Pro Dean attends the examination.
- **Fail:** If the committee agrees that the student has failed, no committee member signs the signature page. The committee chair shall provide the reasons for this recommendation and Department's recommendation for the student's program in writing to the Associate Dean, FGSR and to the student. The Associate Dean will arrange to meet with the candidate and with Department representatives before acting upon any Department recommendation. A decision of FGSR which affects a student's academic standing (ie, required to withdraw or transfer to a master's program) is appealable.

There is no provision for a final oral examination to be "accepted subject to major revisions".

Decision of the final doctoral examining committee: The decision of the examining committee will be based both on the content of the thesis and on the candidate's ability to defend it. Normally, if all but one member of the committee agree on a decision, the decision shall be that of the majority, except when the one dissenting vote is that of the external examiner. If this happens, it must be reported to the Associate Dean, FGSR, who will determine an appropriate course of action. If two or more dissenting votes are recorded, the Department will refer the matter to the Associate Dean, FGSR, who will determine an appropriate course of action.

Master of Forestry (MF)

Program Requirements

This program is designed for practicing foresters. The normal admission requirement is a BSc in Forestry and applicants are expected to have completed 2 years of professional forestry-related experience. The Program consists of *30 units of course weight with a minimum weight of *24 at the graduate level (500 number or higher). The student's program will be developed around the concept of integrated resource management and sustainable development. Course work must include REN R 601 and 602, and at least *3 in each of the following 4 areas - forest resource management, forest biology, statistics/experimental design, and forest policy/sociology/human resources. Upon completion of the course work, students will be required to take and successfully complete, an oral examination on relevant issues. This examination will be based on course work and designed to evaluate the student's knowledge and understanding of the broad area of integrated resource management. There is no residence requirement for the MF degree nor is there a language requirement other than English.

Length of program

Normally, a minimum of 12 months of study and research is needed to complete the requirements for the degree. The duration of the total program must not exceed six consecutive calendar years.

Examining Committee

After fulfillment of all course requirements, the program is capped by an oral examination. The examining committee shall consist of a minimum of three faculty members (tenured or tenure-stream). Membership on the committee will be determined by the graduate coordinator in consultation with the student's advisor and will normally include the advisor. The committee shall include individuals representing a breadth of disciplines and capable of posing questions covering the four areas outlined below. The exam will be conducted according to the General Guidelines for Oral Exams.

Exam content

In addition to any area of concentration pursued during the program, the student will be questioned in each of the following areas: **1) Forest resources management; 2) Forest biology; 3) Experimental design/statistics; 4) Forest policy, sociology, human resources.** The student is expected to display solid upper-undergraduate/graduate level knowledge in all of these areas. In addition, the student must demonstrate the

ability to integrate knowledge from the various subject areas in order to solve problems and address issues relevant to forest management.

Exam outcome

All examiners vote ('pass' or 'fail') on the outcome of the exam. There must be a majority decision in order for a student to pass the exam. If a student fails, they may be given the opportunity to re-take the exam one additional time. The re-examination should take place within six months of the first exam. Prior to re-examination the student should discuss with their advisor and other examining committee members their concerns and what they felt were serious weaknesses in the student's knowledge and ability. Where appropriate, the examining committee may suggest additional reading or guided study prior to re-examination.

Master of Agriculture (MAg)

Program Requirements

The normal admission requirement is a BSc in an agricultural-related discipline and applicants to this program would normally be expected to have completed 3 years of relevant professional experience. The program consists of *30 units of course weight with a minimum weight of *24 at the graduate level (500 number or higher). Each program will include REN R 900 (a project equivalent in weight to *6) plus a well-defined series of courses relevant to the topic of the project and within the realm of agriculture such as soil science, agronomy, hydrology, agro-meteorology. There is no residence requirement for the MAg degree nor is there a language requirement other than English.

Length of program

Normally, a minimum of 12 months of study and research is needed to complete the requirements for the degree. The duration of the total program must not exceed six consecutive calendar years.

Examining Committee

After fulfillment of all course requirements and completion of the REN R 900 Research Project the program is capped by a final oral exam. This exam is designed to test the student's knowledge of the MAg Research Project and related fields. The examining committee will consist of the student's supervisor plus two other faculty members (tenured or tenure-stream), one of whom is from outside the Department of Renewable Resources. Membership on the committee will be determined by the graduate coordinator in consultation with the student's supervisor. The exam will be conducted according to the General Guidelines for Oral Exams.

Exam outcome

All examiners will assess the exam outcome in two categories: Defense - The student's performance will be assessed as satisfactory or unsatisfactory. If judged unsatisfactory, the committee, by consensus, will establish procedures for re-examination; Research Report - The report may be categorized as: "Approved as is", "Requires Revision", or "Report Rejected". There must be a majority decision in order for a student to pass the exam.

Master of Business Administration/Master of Forestry (MBA/MF)

Departments in the Faculty of Agricultural, Life & Environmental Sciences (ALES) and the School of Business (Business) offer a program of joint study that enables students to earn both the MBA and MF degrees after two calendar years of full-time study. Applicants must submit an application form to the Associate Dean, MBA Programs in the School of Business. A letter indicating the intention to apply to the MBA/MF program and including a statement of the applicant's forestry specialization, background and interests should also be enclosed.

Entrance Requirements

Normally only students with a BSc degree in Forestry with at least 2 years relevant professional experience

will be admissible to this program. Applicants must follow the admission procedures and meet the admission requirements of both Business and the Department of Renewable Resources. All applicants are required to have a Graduate Management Admission Test (GMAT) test score of 550 and all students for whom English is not their native language must have a minimum Test of English as a Foreign Language (TOEFL) score of 600 (paper-based) or 250 (computer-based). Admission will be recommended only for those students judged to have the ability and motivation to handle the significant demands of the program.

Program Requirements

- *30 required core MBA courses
- Three *3 elective MBA courses
- Two *3 graduate elective courses (Business or AFHE)
- REN R 601 and 602 and 3 other approved *3 graduate-level Forestry courses
- SMO 641 Business Strategy

Students who decide to transfer out of the joint program into the regular MBA or MF program will have to apply and meet the full degree requirements of that program.

Length of Program

Students enrolled in the joint program on a full-time basis can complete the program in two calendar years. Students may undertake the joint program on a part-time basis. The duration of the total program must not exceed six consecutive calendar years.

Master of Business Administration/Master of Agriculture (MBA/MAg)
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The Departments in AFHE and Business offer a program of joint study that enables students to earn both the MBA and MAg degrees after two calendar years of full-time study. Applicants must submit an application form to the Associate Dean, MBA Programs in Business. A letter indicating the intention to apply to the MBA/MAg program and including a statement of the applicant's agricultural specialization, background and interests should also be enclosed.

Entrance Requirements

Normally only students with a BSc degree in agricultural-related discipline with at least 3 years relevant professional experience will be admissible to this program. Applicants must follow the admission procedures and meet the admission requirements of both Business and the Department of Renewable Resources. All applicants are required to have a GMAT test score of 550 and all students for whom English is not their native language must have a minimum TOEFL score of 600 (paper-based) or 250 (computer-based). Admission will be recommended only for those students judged to have the ability and motivation to handle the significant demands of the program.

Program Requirements.

- *30 required core MBA courses
- Two *3 elective MBA courses
- Two *3 graduate elective courses (Business or AFHE)
- Five *3 approved graduate-level courses in agricultural-related disciplines
- SMO 641 Business Strategy
- A *3 project in agriculture with a significant business component

Students who decide to transfer out of the joint program into the regular MBA or MAg program will have to apply and meet the full degree requirements of that program.

Length of Program

Students enrolled in the joint program on a full-time basis can complete the program in two calendar years. Students may undertake the joint program on a part-time basis. The duration of the total program must not exceed six consecutive calendar years.

DEPARTMENT FACILITIES

Office Space

The Department is generally able to provide a desk in a shared office space to graduate students who require a desk on a frequent basis and are “in residence” here at the University. Keys, allowing access to the General Services, Earth Sciences and Human Ecology Building and relevant departmental facilities, can be signed out to each graduate student on request. Graduate students are asked to use departmental facilities in a cooperative and responsible manner. Please keep your area tidy, ensure that doors are secure when you are last out, and report any problems with facilities to the General Office. Please tell office staff immediately when you no longer require a desk, so that it can be re-assigned to others.

Department Council

The Department of Renewable Resources Council is empowered to determine policy on internal Department matters consistent with Faculty and University policy. Department Council meetings are held on an *ad hoc* basis throughout the year.

Core Department Council members as mandated by GFC:

- Department Chair, Faculty Dean, and Continuing Academic Staff Members.
- 2 Undergraduate Students, as selected by the appropriate Student Associations
- 2 Graduate Students (number determined by the Faculty Council on recommendation from the appropriate Department Council)

Additional voting members of Department Council will include:

- 2 Non-Academic Staff representatives
- All Research Professors
- Certain individuals with current appointments under the “Sessionals and Other Temporary Staff” Agreement.

The Department Chair is also empowered to invite, at his/her discretion, participatory non-voting individuals, as well as guest observers, to attend Department Council meetings.

Theses

The Department maintains a small collection of theses, books, periodicals and other materials in the John Dawson Newton Conference Room in 442B ESB and in the meeting room in 760 GSB for use by staff and graduate students. All materials must be used in these rooms and cannot be removed except for photocopying. Theses may be signed out for short periods of time.

Stationery Supplies

Students are expected to provide their own writing paper, pencils, pens, and other office supplies. Students should discuss their office supply needs with their supervisor.

Audio-Visual Equipment

The Department has overhead and slide projectors, 5 digital projection viewers, and a variety of digital camera equipment available for use by staff and graduate students. The equipment may be reserved at both ESB and GSB offices. Note that digital viewers are not to be used off campus by students without sign-off by an academic supervisor. In GSB, use the sign-out binder in the marked drawer under the front office counter when you book and return the equipment. Slide projectors are to be kept in the locked blue cabinets in 751H GSB. Ask Christie for the key. For ESB, use the sign-out binder for carousel projectors and VCRs, which are stored in 442C. Computer projectors in ESB are signed out through Darlene.

Please ensure you are fully aware of the functions of how to use the digital equipment prior to your presentation. Contact Wolf or Mike for training if necessary.

Please inform office staff immediately if any of the equipment is not working properly. If equipment is taken off campus, an authorization form must be completed for insurance purposes. This form can be obtained from Darlene or Christie. Please note that AV equipment can also be booked through (and

delivered to your classroom by) the University's Technical Resource Group (phone 492-2183 or 492-3923). AV equipment for courses held elsewhere on campus must be booked through Technical Resource Group.

Photocopying

The departmental photocopiers are housed in 749 GSB, the room adjoining the main office, and in the auxiliary office (442 ESB). They are for use by departmental staff and graduate students on a first-come, first-served basis. However, when it is required by office staff, please allow them to use the machines. Door entry to 749 GSB is by key code so that graduate students have access during off hours. Graduate students should obtain a photocopy code from their supervisors and should reach an agreement with their supervisors about what should or should not be photocopied and what remuneration, if any, is required. If graduate students are photocopying because of services provided to the Department, they should either give the material to office staff for photocopying or obtain a photocopy number from the office staff.

Communications

Telephone calls, fax messages and mail relating to the research project may be sent with authorization of the supervisor and/or grant holder. Personal mail must be stamped and may be left in the main office or auxiliary office for pick-up. Personal long-distance telephone calls cannot be made from Department telephones. Local work-related fax sending and receiving (which is not chargeable to research accounts or course accounts) is available on the honor system using posted rates comparable to those charged at the Post Office; cash payment is required. Long-distance faxing requires the grad to have a long-distance authorization code attached to his/her supervisor's research account. For ESB, the FAX number is 492-1767 and is housed in 442 ESB. For GSB, the FAX number is 492-4323 and is housed in 749 GSB. Graduate student mailboxes are located both in 442 ESB and 749 GSB and are accessible during off-hours. For those students housed in GSB, ask Christie for the door access code.

Working Alone Regulations and Lab Safety

In April 2001, the Alberta Government's new "Working Alone" regulations came into effect. The Department regulations are posted on the Department website under Intranet, "Resources" at: <http://www.ales2.ualberta.ca/rr/intranet/>. To access this site, students may be asked for user ID, password and domain (Vega). For more specific information, please contact Bob Longworth, APO. Information about lab safety or Workplace Hazardous Materials Information Systems (WHMIS) are also found on this page. For further information on safety contact Alex Drummond, Facilities and Field Schools Coordinator at (780) 492-2056 or e-mail: alex.drummond@ales.ualberta.ca, or Donna Friesen, Senior Departmental Laboratory Technologist at (780) 492-4142 or e-mail: donna.friesen@ales.ualberta.ca.

Other University Services

The **ONEcard** is the University's multipurpose debit and identification card for staff and students. The ONEcard functions as your University ID card, your library card, and as an authorization card for using the recreational facilities in the Physical Education Building. It can also be used as a debit card for photocopying and laser printing outside the Department. This can be prepaid at Cameron Library through the completion of an Indent form that can be picked up in the Department offices. Your ONEcard may be obtained from the ONEcard office, located in the lower level of Cameron Library, room B-12.

Universal Transit Pass (U-Pass) gives eligible students unlimited access to regular Edmonton, St. Albert and Strathcona County Transit services valid for fall and winter terms and will be assessed \$75/term. Your **ONEcard** with a Universal Transit Pass (U-Pass) validation sticker is your transit pass. You can obtain a U-Pass sticker for the fall on or after August 20th.

Graduate Student Association

(GSA) is located in 206 North Power Plant. A handbook about the GSA and student benefits is available from the GSA office. The GSA offers a dental plan for all graduate students who register full time in September. The GSA also offers a Lecture Grants Program to aid graduate student groups in bringing guest speakers to the University of Alberta. For more information, visit the GSA home page at: <http://www.gsa.ualberta.ca>.

International Centre

The International Centre is located in 172 HUB. For information about services, visit their home page at: <http://www.international.ualberta.ca/>.

Department GIS facilities

The Spatial Information Systems Laboratory provides hardware and software resources to graduate students, researchers and faculty to facilitate and enhance spatial and image analysis, and ecosystem and social modeling. Access to the lab can be gained by contacting Rick Pelletier (rick.pelletier@ales.ualberta.ca).

Computer Resources for Students

Departmental Computer Support

The Department currently has four computer staff servicing four buildings:

Mike Abley, Information Technologist for RenR/Faculty of AFHE and Coordinator of the AFHE Undergraduate Computing Labs(745 GSB, 492-2533, Michael.Abley@ales.ualberta.ca) is **the resource person for new computer purchases**, computing hardware problems, programming for research and teaching, assisting with computer-based course material, coordinating the Faculty Undergrad. lab booking & software, advising and assisting with new equipment orders, Xerox Workcenter issues and advanced trouble shooting problems. He also works with Judy in providing multimedia support, along with managing the hardware in the Dept. Multimedia facilities. Mike works with Wolf as backup for Department desktop support.

Wolf Liu-Maynes, Computer Support (744 GSB, 695-9543, wolf.liu@ales.ualberta.ca) is responsible for desktop support, new system set-up, connecting student computers to the department network, and general trouble-shooting for the Department and SIS lab. **Wolf is the first contact for most desktop-related problems, including our two graduate computing labs.**

Judy Huck, Webmaster and Multimedia Technician (742A GSB; 492-8621, Judy.Huck@ales.ualberta.ca) is responsible for maintaining the Department website and is **the resource person for web development and instruction in the use of multimedia software and equipment** such as scanners and OCR tools. She also designs and develops graphics and assists with graphics production and manipulation. Judy will help with WEBCT issues for those students who need to work on courses developed using WEBCT.

Nash Goonewardena, Junior System Analyst. (747 GSB; 492-2930, avinash.goonewardena@ales.ualberta.ca) works with the technology group to ensure timely delivery of services such as network administration, desktop support and development of database and web services required for Faculty and Department stakeholders. The owner of the position and the primary department of responsibility is the Department of Renewable Resources with secondary duties to support Faculty technology initiatives. In conjunction with Faculty system analysts and LAN administrators, Nash creates and maintains operating policy, and administers core network infrastructure technologies such as network switches, firewalls including security of services, etc. Creates and maintains database and web services, and assists in desktop support including documentation and training for custom applications.

The Department provides free connections to the Internet to all our graduate students on campus. Each desk has a network jack nearby so students are welcome to use their own PC or laptop on campus. Our only requirements are that you must purchase anti-virus software and follow the University computing policies for computing use. Please see Wolf for the necessary network settings.

Graduate students are responsible for their own hardware and software costs, including toner cartridges on personal printers and their related repairs. It is recommended that students consult with Mike before buying

computers. Due to the sheer numbers of students and staff, home computing issues are not generally supported by our staff, but they will usually provide friendly advice and help for most problems.

Current Standards

- The Department supports MS Windows XP Professional and VISTA as its main operating systems with MS Office 2003/2007 as its office suites. We also provide limited support for the Apple suite of products.

Note that we do not allow any pc operating system older than Windows 2000 (eg Win 95/98) on our network for security reasons.

- **MS Office is free** to Graduate students and staff. See AICT on the 3rd floor of GSB with your OneCard and \$10 (for the disks) to pick up your copy. You can choose either Office 2003 or 2007.
- All computers on the Department's network are **REQUIRED** to have an anti-virus package such as Norton Antivirus installed. There is a free antivirus program provided by AICT to all UA students called F-Secure available at <http://www.ualberta.ca/AICT/VIRUS/fsecure.html>. Please report any viral/worm incidents to Wolf or Mike.

Computing Accounts and E-mail

If you are a new student, you will need to see Wolf or Mike to log in to department computers and email distribution lists.

Students at the University are entitled to a computing account at no charge. There are two different types of accounts for students, one is provided through the Faculty and one through the Academic Information & Communications Technology (AICT - formerly Computing and Network Services). University computing accounts are commonly referred to as CCID (Campus Computing ID) accounts. To activate your ID go to <https://password.srv.ualberta.ca/>.

Internet/Dept. Network Access for Personal Systems

Wolf can make the necessary changes on your system to allow Internet access and to join the AFHE domain. Being part of the domain provides extra temporary file transfer space and allows free network printing to printers in both Graduate computing labs and the printer in the Human Ecology Building.

File Space

After logging into AFHE, you should see several network drives under 'My Computer'. AICT gives all students 1 GB of free server space for file storage which can be accessed through your 'Q' drive. Some academic staff also use an 'R' drive for their research that is sometimes shared with their graduate students. There is also a 'T' drive that can be used for temporary storage or sharing with other staff or students. Caution: this 'T' drive is erased every Monday morning and is *completely open to ALL staff and grads in the Faculty*.

E-Mail

In addition to the 1 GB of file storage space, students have 1 GB of space for e-mail accessible via Webmail: <https://webmail.ualberta.ca/>. If you prefer to use another email client, please contact one of the IT staff.

Web Issues

The Department's main Web address is at www.ales.ualberta.ca/rr. See Judy Jacobs for assistance with any Web-based needs. Current graduate student names, degree program, supervisor, office room and telephone numbers, and e-mail addresses are routinely posted on the Department's Web site. If students do not wish to have this information posted or have changes in information, please contact Judy or Amanda. Inquiries about hosting course or research material on the web should be directed to Judy. The University provides tools for developing courses interactively on the Web through the use of site-licensed WEBCT

software. Personal Web pages for students are supported on their AICT CCID accounts only and these web pages must follow AICT standards. Info on how to setup your own Web page on AICT can be found at <http://www.ualberta.ca/WebSupport/>.

Home Access

We strongly encourage all who can afford it to get the high-speed Internet connections.

IMPORTANT: We ask you to consider others and limit your personal use of streaming audio or video as this uses the commercial feed from outside and ties up valuable bandwidth needed for University business. AICT's maximum daily bandwidth limit is 1 Gigabyte. Their policy is at: <http://www.ualberta.ca/AICT/policy/bandwidth.html>

Departmental Equipment and Resources

The Department provides a number of excellent computing resources:

- **Two Graduate Computer labs:** 228 ESB, and 728 GSB. Each lab contains PC computers and free laser printing. To use these computers, you must be logged into the AFHE domain. All machines in the two Grad labs use Windows XP Pro, Symantec Norton Antivirus, and MS Office 2003 which includes Word, Excel, PowerPoint and Access. In addition, the Department has installed a number of specialized packages on certain labelled computers. These packages include SPSS, SAS, SigmaPlot, etc. (Note: ANY graduate student in the Department can use either lab, not just the lab located in the building that houses your office.) Please use the laser printing responsibly as the department is facing increasing costs to maintain this service.
- **Multimedia workstations:** The Department operates a multimedia lab in 742 GSB with 3 pcs and 1 iMAC and assorted scanners. We have:
 - Slide/negative/film strip (2-6 frames) scanners and photo scanners
 - Nikon Coolscan 5000 Slide scanner with slide feeder, capacity of up to 50 slides at once @ 4900 DPI
 - Document/flatbed scanners with multi-sheet feeder and OCR capability
 - A suite of Adobe image enhancing software: PhotoShop, Acrobat, Illustrator, Go-Live

Please see Judy or Mike if you would like instruction on the use of this equipment. *First time users are required to have instruction from Judy or Mike on the use of the Coolscan Slide scanner or Document feeder.* In addition, ESB has a workstation with a slide/flat-bed scanner located in 442 ESB.

Digital projection viewers with laptop computers are available in both ESB and GSB. Use projectors for presentations in campus lecture rooms that do not have ceiling mount units. *First-time users should see Wolf or Mike for operating instructions.* To book projectors and laptops, please see Darlene in 442 ESB or Christie in 751 GSB. Remember that 236 ESB is a 'smart' classroom and has a ceiling mounted viewer (resolution: 1024*768) with a built in PC. See Darlene to get the key and passcode to use the facilities in 236 ESB.

New Xerox Workcenters are available in both ESB and GSB. New this year are the Xerox photocopiers/scanners/fax/printers. You can scan up to Tabloid size in color to your e-mail address, for free. Photocopier charges are 10 cents/page/side and is available through an account setup with your supervisor.

Other Faculty Resources

- **Two AICT PC computer labs** in GSB 866 and 217 are open to students. Please see Mike first if you need to book the labs or if you have any questions or issues regarding the hardware or software. Lab hours are from 8:00 a.m. – 10:00 p.m. Please note that SAS and/or SPSS are available in these two labs, along with a variety of specialized software purchased by the Faculty such as ArcView 9.x.

UNIVERSITY TEACHING PROGRAM

The Program

The Department of Renewable Resources values quality teaching and participates in the University Teaching Program (UTP) to provide its graduate students with an opportunity to develop their teaching skills. More information is available at the FGSR website: <http://www.gradstudies.ualberta.ca/>. A narrative statement on the student's transcript will note successful completion of the UTP. The components of the Department UTP are as follows:

Pedagogical Requirements

The student will attend a minimum of 40 hours of formal pedagogical training sessions consisting of:

- **Core:**
At least ten sessions (at least 15 hours of instruction) offered by University Teaching Services (UTS) in the core areas of: curriculum (3 sessions), instruction (3 sessions), evaluation (2 sessions), management (1 session), and self-improvement (1 session).
- **Electives:**
The remaining 25 hrs of formal pedagogical training must be approved by the student's teaching mentor, but can come from a variety of sources including additional UTS sessions, instruction provided by other Departments to enable students to meet UT requirements, or through other means approved by the teaching mentor.

Practicum:

Each student must complete:

- At least two terms of TA work (a minimum of 3 hrs/wk) or equivalent, with substantial duties of actual teaching in a laboratory or classroom setting. If it is not possible to obtain two terms of TA work, the teaching mentor may approve activities such as sessional teaching at the University of Alberta or other institutions, teaching continuing education or extension courses, giving tutorials etc., as equivalent experience.
- At least 150 minutes of lecture for which the student is wholly responsible.
- At least two teaching events will be videotaped for discussion and assessment by the student's teaching mentor and one other approved appraiser. Feedback on the first event must precede the videotaping of the second event. At least one of these events must be of a lecture for which the student is wholly responsible.
- At least 20 hours of teaching-related activity. This could include developing assignments, composing exams, participating in teaching events as a volunteer, presenting seminars, teaching in extension courses, and delivering outreach presentations such as government or industry seminars and workshops. Merely assisting students in a laboratory would not count towards these 20 hours. Approval by the teaching mentor, of activities to be credited towards the practicum requirement, is required. Experience in a wide range of teaching activities (lecturing, creating exams, leading seminars, providing lab assistance etc.) is very desirable.

Documentation

- The student will keep a teaching record book attesting to completion of the various elements of the program and submit this to UTS for assessment.
- The student will develop and maintain a teaching dossier, which is a record of teaching philosophy, experience, and accomplishments.

Administration

- The duties of the Program Coordinator will be carried out by the Graduate Program Coordinator of the Department. These duties will include:

- making potential students aware of the program (eg inclusion of the University Teaching Program option in the Departmental Graduate Student Handbook);
- establishing and maintaining a list of potential teaching mentors;
- reviewing the students' record books to ensure that University and Departmental requirements for the program have been met, before the student submits their records to FGSR;
- responding to questions and arising issues relating to the program.
- keeping a list of registered students
- It is the student's responsibility to find a willing teaching mentor from among the list maintained by the RENR UT Program Coordinator. In addition to the roles outlined in The University Teaching Program, the duties of the *Teaching Mentor* will include:
 - helping the student to decide how to fulfill specific requirements of the program;
 - signing off on completed activities in the teaching record book.

Limitations

Clearly, a limitation on this program will be the availability of teaching experience opportunities and the individual capabilities of the students; it is not possible to guarantee such opportunities to all students wishing to participate in this program. A student who does not complete all of the required elements will nevertheless have in the teaching record book a formal verification of those elements that have been completed.

Instructional Skills (IS) Program

The program <http://www.gradstudies.ualberta.ca/utp/index.htm>

Students interested in the University Teaching Program who lack the teaching experience opportunities that are required for that program may wish to complete the Instructional Skills (IS) program. The details are below, but the pedagogical requirements and the need to complete a teaching dossier are the same as for the University teaching program. The extensive practicum requirement of the University teaching program, however has been replaced by a microteaching requirement that can more easily be satisfied. Although completion of the IS program will not be noted on the student's transcript, they will receive a congratulatory letter and a parchment. The components of the instructional skills program are as follows.

Pedagogical requirements

This first component involves a variety of pedagogical topics, which will be offered through presentations, seminars, and workshops. Participants should budget 40-50 hours of in-class time for this component. Of the 40-50 in-class hours, a minimum of 20 core sessions will be UTS seminars or workshops. The core curriculum falls into the following categories: five curriculum (what to teach and how to organize it), five instruction (how to teach the content), four evaluation (did learning occur), four management (in and out of class), and two self-improvement (becoming a better teacher) sessions. The remainder of the required in-class hours may be garnered by participation in departmental professional development sessions (maximum 8 hours), Academic Technologies for Learning presentations (maximum 8 hours), Arts Technologies for Learning Centre presentations (maximum 4 hours), Computing and Network Services training workshops (maximum 4 hours), or other UTS sessions. As participation in the pedagogical sessions does not involve formal evaluation, it is essential that each individual gets verification of attendance in the IS Program Chart and is present for the entire duration of each session. Retroactive verification will not be provided.

Microteaching

This component involves two microteaching presentations. The first microteaching activity may commence after a participant has completed a minimum of 25 hours of pedagogy. Microteaching is a condensed version of a longer presentation. In the IS Program, 10 minutes are allotted for the presentation. It will contain an introduction, a middle section, and a conclusion. The microteaching component will be assessed and given feedback by a group of IS Program colleagues and by the presenter him/herself. A videotape will also be made, which affords the presenter the opportunity to review the performance in private and allows

for reflection on the content and instructional methods featured. The first microteaching presentation ideally should assist in planning and executing the second to result in a superior presentation. When planning the microteaching presentation consider, selecting a topic that will be of interest and understandable to a diverse audience. It does not have to be in the presenter's field of study or work, but could be on any topic. For example: how to install a dimmer switch, prepare a herb garden, arrange for an end-of-term party, wax downhill skies. Remember the instructional window is 10 minutes. We hope that participants will consider microteaching as a collegial, safe, and fun experience, where they display their intuitive and learned abilities to organize and present information, where they will gain confidence, receive praise, and acquire directions for future improvements or different approaches for their presentations. UTS will arrange for three to four microteaching times during the academic year for IS Program participants who are ready to engage in this component. At these prearranged times each member of the group will present, give feedback, receive feedback, and engage in self-reflection and summary of suggested strategies.

Teaching Dossier

Participants will develop and submit a Teaching Dossier to UTS as the final component of the IS Program. The Teaching Dossier is a living and cumulative record of achievements. It is recognized that participants bring different backgrounds to the IS Program and that their Teaching Dossiers will vary considerably based on their experiences.

FINANCIAL ASSISTANCE

Ideally, students should be adequately funded so that they can focus on their studies without the burden of financial distractions. The Department is committed to working with supervisors and students to ensure reasonable financial support for all qualified students. The primary sources of funding are indicated below.

Research Grant Support

Most graduate students in our Department are funded by academic staff from their research grants. Staff members, in general, fund only highly qualified, research-oriented students who are interested in research in the staff member's specific area of interest. The amount of support will vary with the nature of the research grant and regulations of the granting agency. Students should contact their supervisor for more information. Research or trust-funded graduate assistants, who are not covered by the regulations of the granting agency, are governed by a collective agreement between the GSA and Board of Governors, under the Regulations Governing Employment of Academically Employed Graduate Students (AEGS) at: <http://www.gradstudies.ualberta.ca/awardsfunding/assistantships/index.htm>. A registered graduate student who proceeds with his/her graduate program and is appointed to carry out research or administrative duties is designated as a **Trust Appointee (TAP)**. For **TAP-As**, work performed contributes to the completion of the student's thesis and for **TAP-Bs** the work performed does not contribute to the thesis.

Graduate Assistantships

Although most students are funded by grants held by supervisors, a number of students receive support (although typically not enough to cover all living expenses) from the Department in the form of Graduate assistantships. The two primary sources of funding are Graduate Research Assistantship Funds (GRAF) and Graduate Teaching Assistantships (GTAs), although some students are departmentally funded for other teaching related activities. GRAF and GTA funds are administered through the Department under the same collective agreement as for trust-funded graduate assistants under the Regulations Governing Employment of Academically Employed Graduate Students (AEGS).

Graduate Teaching Assistantships (GTA)

- The Department Chair assigns a certain number of hours per week of GTA funding to those courses that require teaching assistance. The instructors then select those students who they want as teaching assistants and notify the Graduate Contact of this.
- **If you are interested in obtaining a GTA, you may wish to first speak with the Graduate Contact to determine which instructors will be receiving GTA funding, and then contact the relevant instructor(s) and indicate your interest in assisting with their course.**
- Students awarded a GTA are given a written offer of appointment and a time use guideline which must be completed by the instructor and signed and accepted before payroll processing.
- Students awarded a GTA are required to attend at least one session of Orientation Symposium for Graduate Teaching Assistants which occurs before the start of terms 1 and 2.

Graduate Research Assistantship Funding (GRAF)

Procedures for Graduate Research Assistantships

- The call for applications is sent to all academic staff and graduate students in June and these applications are adjudicated in August. Occasionally, there has been an additional competition in November, when there were unallocated funds from the August competition.
- Applications are completed by students.
- A subcommittee drawn from the Graduate Program Committee adjudicates these awards.
- Three criteria are used in the allocation of funds: recruitment, academic achievement and need.
 - **Recruitment:** The highest priority will be for recruitment, particularly those cases where Departmental bridge funding is required until external funding can be secured. The Department has limited funds available for the support of students, and desires that student supported at least at the NSERC level. Therefore, applications will have a higher probability of being funded if it can be shown that external funds are likely to be forthcoming and that additional Departmental funding will not be required.
 - **Superior academic achievement:** Evidence for superior academic achievement could include excellence in course work; previous scholarships; research progress as evidenced by: thesis proposal, posters or talks presented at scientific meetings, scientific papers submitted or published; positive results of Pre-Candidacy and Candidacy exams and grant proposals. The Department's intent is that the funds should go directly to the student. It is unlikely that a student would receive an award if the supervisor is going to claw back an equivalent amount of funds from the student's stipend, unless the supervisor could provide a strong argument that such a claw back was necessary to provide adequate funding for the student's research.
 - **Need:** A high-priority will be to offset the fee differential charged to foreign students. Applications for funding based on need will more likely be successful if the student: presents evidence of superior academic achievement, is making good progress towards completion of the degree, and has not previously received substantial need-based funding. Occasionally, students will begin their programs on the understanding that their supervisor cannot provide any stipend for them. This is not something that the Department encourages. Such self-funded students are a low priority for need-based funding.

Funding for other teaching related activities

Graduate students may also be employed by the Department in teaching-related employment which does not conform to the requirements of a Graduate Assistantship. This type includes, but is not limited to reading, marking, and demonstrating. Minimum salary rates are set under the Regulations Governing Employment of Graduate Students in Academically-Related Employment, another collective agreement negotiated between the Graduate Student's Association and the Governors of the U of A. Information is available at the FGSR website. <http://www.gradstudies.ualberta.ca/awardsfunding/assistantships/index.htm>.

Awards and Scholarships

Graduate students are encouraged to obtain financial support by applying for scholarships, fellowships and other awards. Some of these are very prestigious and would be more than adequate to cover all living expenses. A number of these awards and scholarships are available from agencies and institutions outside of the University, while others are administered internally.

Available through external agencies (i.e. outside of the University of Alberta).

An extensive list of external agencies that fund graduate students is provided in Appendix 1. Probably the most significant external funding agency is the Natural Sciences and Engineering Research Council (NSERC). Although NSERC has a number of programs for funding students, two of the more important are the Postgraduate Scholarship (PGS) program and the Industrial Postgraduate Scholarships (IPS) program that are briefly described below. These are available to Canadian citizens or permanent residents of Canada.

- NSERC Postgraduate Scholarships (PGS) provide financial support to high-calibre students who are engaged in master's or doctoral programs in the natural sciences or engineering. PGS M and PGS D awards for Masters and doctoral studies, are valued at approximately \$17,300 and \$21,000 per year, respectively. The even more prestigious CGS M and CGS D awards are valued at approximately \$17,500 and \$35,000 at the Masters and PhD levels, respectively. Information on these awards is available from the NSERC Web page <http://www.nserc-crsng.gc.ca/>. Recipients of a master level NSERC award (other than an industrial postgraduate scholarship) will normally receive a Walter H. Johns (WHJ) Graduate Fellowship Award worth approximately \$4,400. Recipients of PGSD and CGSD awards will receive the presidents Doctoral Prize of Distinction (worth \$10,000) for one year and 18 units fell index plus non-instructional fees in subsequent years that the NSERC doctoral award is held.
- NSERC Industrial Postgraduate Scholarships (IPS) provide financial support for highly qualified science and engineering graduates. The support allows them to gain research experience in industry while undertaking advanced studies in Canada. These scholarships are aimed at encouraging students to consider research careers in industry where they will be able to contribute to strengthening Canadian innovation. Recipients of these awards are no longer eligible for the Walter H Johns Graduate Fellowship.

Available through the University.

There are several categories of University awards, including FGSR recruitment scholarships, FGSR General awards, FGSR travel awards, the Walter H. Johns Graduate Fellowship, Departmental recruitment scholarships, and specialized awards.

FGSR recruitment scholarships. These scholarships are used to attract top students to our University. There is no application form; eligible students typically are nominated for these awards by the Department at about the same time as the Department recommends the student for acceptance into a graduate program. Recipients are selected by FGSR; decisions for these awards will be made on a monthly basis, starting in December each year, and the process will be repeated until all of the awards are allocated. A brief description of these awards is shown in the table below; further information is available in Appendix I.

	Value	Citizenship	Duration
FS Chia PhD	\$24,000+tuition, fees	Foreign	2 years; Department (typically supervisor) funds for years 3,4
U of A PhD	\$24,000+tuition, fees	Canadian	2 years; Department (typically supervisor) funds for years 3,4
Provost doctoral entrance award	\$4,409 (Canadians); \$8000 (foreign students)	Foreign and Canadian	1 year + possible renewal
U of A Master's	\$17,000+tuition, fees	Foreign and Canadian	1 year; Department (typically supervisor) funds for year 2
U of A course based Master's	\$13,000+tuition, fees	Foreign and Canadian	1 year

FGSR General awards. A number of different awards, including the Izaak Walton Killam Memorial Scholarship, the Dissertation Fellowship, the Queen Elizabeth II Graduate Scholarship, (Doctoral and Master's) and the Andrew Stewart Graduate prize are available. Details of these awards are provided in Appendix I, under the title "FGSR General Awards". In November or December, the Department will send out information to all current Graduate students, explaining how to apply for these awards. After all of the applications have been received in the Department, they will be evaluated and ranked by a subcommittee from the graduate committee and then submitted to FGSR for final adjudication.

FGSR travel awards. These are the Mary Louise Imrie Graduate Student Award and J Gordin Kaplan Graduate Student Awards. They provide \$200-\$600 for MSc students and \$200-\$800 for PhD students who are traveling to conferences and symposia etc. where the student will actively interact with colleagues.

Departmental recruitment scholarships. Two awards, the Al Brennan Memorial Graduate scholarship (valued at \$15,000) and the West Fraser Timber Graduate Scholarship (valued at \$5,000) are available to support students in forestry.

Specialized awards. For some of these awards, the Department selects the recipient; for others, the Department nominates a candidate to FGSR which selects the recipient from among the nominees from different departments. In either case, the Department will solicit applications for these awards in June or July; adjudication will occur at the same time as for the GRAF awards.

Payroll and Tuition Fee Payments

Recurring Monthly Payments

Graduate Students with recurring monthly payments, whether from scholarships or awards, teaching, research or other on-campus employment, will receive payment through Staff & Student Payments by direct deposit to your personal bank account (Electronic Banking Form must be received at Staff & Students Payments as per the Pay Action Form Deadlines). The banking form is available:

- in person at Staff & Student Payments, 2-23 Assiniboia Hall, 2-60 University Terrace
- in the Staff & Student Payment forms cabinet at: <http://www.hrs.ualberta.ca/Forms/>

Please ensure the Department has submitted the required forms to Staff & Student Payments by the payroll deadlines, usually the end of the first week of the month. Graduate Student Appointment Pay Action forms received after the deadlines will be processed for the next monthly payroll run. Payday for monthly pay is the second last banking day of the month. If you have problems with your paycheque, please contact Donna Thompson.

Payment of Fees by Payroll Deduction

If you are appointed as a GRA, GTA, TAP-A or TAP-B, any tuition fees owing after the payment deadline are automatically divided into 3 equal installments each term and deducted from your paycheque. For Term 1 fees, one installment is deducted from paycheques issued in each of the following months: October, November, and December; Term 2 fees are deducted from your paycheque in February, March, and April.

For further information, please see the following website:

<http://www.gradstudies.ualberta.ca/awardsfunding/assistantships/pay.htm>

Graduate Student Tuition Remission Form

This form is used when the Department or supervisor wishes to make a one time payment towards a student's fees over and above the regular stipend of the student. The payment can come from either trust or operating funds and will be coded as an award to the student for tax purposes. No income tax or other deductions will be taken out of that amount. The money will be deposited directly to the University fees account from payroll so the student will only be required to pay any additional fees still owing, if necessary. See Appendix II, sample of forms.

Emergency Student Loans

If students' paycheques, awards or scholarships are delayed for any reason, emergency student loans are available from the Student Financial Aid & Information Centre (1-80A SUB) to assist in bridging the funding gap. Emergency student loans of up to \$1,500 can be issued within 24 hours. The loans are interest-free and must be repaid within three months. They are a better funding option than utilizing credit cards, which carry an interest penalty. For additional information, please contact Emergency Aid Advisor at 492-3483, by e-mail at: emergaid@ualberta.ca, or visit their website at: www.su.ualberta.ca/su/businesses_and_services/sfaic.

Off campus Work Program

International students at the University of Alberta are now eligible to apply for a work permit under Citizenship and Immigration Canada's (CIC) Off Campus Work Permit Program. The links below outline which students are eligible to participate, what documentation the University of Alberta must provide to students in support of their work permit application and the process for obtaining these documents. This includes Consent and Verification forms, which are submitted to the International Centre. It is important to note that students participating in the Off Campus Work Program must possess both a study permit and a work permit to be eligible to work off campus during their studies.

Students are restricted to working part-time (a maximum of 20 hours per week) during the academic term, but may work full-time during breaks such as reading week or in the spring/summer break.

For further information please visit the following websites:

<http://www.international.ualberta.ca/current/ocwp.cfm>

<http://www.cic.gc.ca/english/pdf/kits/forms/IMM5582E.pdf>

If you have any further questions, please contact Donna Thompson.

APPENDIX I

SCHOLARSHIPS AND FELLOWSHIPS

Scholarships & Grants from External Agencies

Alberta Chapter of the Wildlife Society Post-Graduate Award Value: \$1500. This award is open to students planning a career in wildlife management and accepted into a full-time postgraduate degree program at an Alberta university in Biological Sciences, Forest Science, Animal Sciences, Zoology, or related field of study. Application and information at: www.albertadirectory.net/actws/ Deadline: 15 Feb.

Alberta Conservation Association (ACA) Grants in Biodiversity Value: typically \$10,000, up to \$20,000 for 2 years. U of A graduate student or PDF are eligible to apply. The program supports research in biodiversity, conservation biology and ecology, management responses of Alberta flora and fauna. Application and information at: www.biology.ualberta.ca/biodiversity/application/application.htm. Deadline: 1 November.

Alberta Graduate Student Scholarship Value: \$2,000. Automatically awarded to 2nd year full-time Masters students with GPA > 3.3 from the Government of Alberta. Information at: <http://www.alis.gov.ab.ca/scholarships/info.asp?EK=861>.

Alberta Heritage Scholarship Fund – Ralph Steinhauer Awards of Distinction Value: \$20,000 (PhD) \$15,000 (MSc). Eligibility: Canadian citizens or permanent residents of Canada. For PhD, must have completed at least 1 yr of study. Must study within Alberta. Information and application at: www.alis.gov.ab.ca/scholarships/info.asp?EK=40. Deadline: 1 February.

Alberta Ingenuity Graduate Scholarships Value: \$26,000 for PhD and \$23,000 for MSc stipend plus \$1,500 research allowance/year up to 4 years for PhD and 2 years for MSc. Eligibility: incoming students or students already in the first year of their MSc or PhD program undertaking full-time research training in a science or engineering discipline. Information and application at: <http://www.albertaingenuity.ca/index.php?programs-and-funding/individual-awards,graduate-scholarships>. Deadline: 15 January.

Alberta Sport Recreation Parks & Wildlife Foundation Value: max of \$1000 for 3 years. (<http://www.tprc.alberta.ca/asrpwf/programs/funding/dip/index.asp>). Deadline: 1 January, 1 May, and 1 October.

Canadian Circumpolar Institute (CCI) Northern Research Funding Northern Scientific Training Program (NSTP) Grants; Circumpolar/Boreal Alberta Research (C/BAR) Grants; CCI Block Grants; provides 'seed' funding that is aimed at offsetting the high cost of conducting research in the north <http://www.uofaweb.ualberta.ca/polar/>. Deadline 1 November.

Canadian Federation of University Women Edmonton – Margaret Brine Scholarships for Women Value: \$2,000 – 4, 000. Information and applications at FGSR or found on website: <http://www.cfuw-edmonton.org>. Deadline: 22 February.

International Development Research Centre (IDRC) Community and Forestry: Trees and People - John G Bene Fellowship Value: \$15,000. Canadian citizen or permanent resident of Canada. Focus on relationship of forest resources to the social, economic, cultural and environmental welfare of people in developing countries. Information and application at: www.idrc.ca/awards . Deadline: 1 March.

IDRC Bentley Cropping Systems Fellowship Value: up to \$30,000. Canadian citizen, permanent resident of Canada, or citizens of a developing country. Cropping systems research on very small farms in a developing country. Information and application at: www.idrc.ca/awards. Deadline: 1 October.

IDRC Doctoral Research Awards Value: \$20,000. Canadian citizen or permanent resident of Canada. Focus on social and economic equity; environment and natural resource management, information and communication technologies for development. Information and application at: www.idrc.ca/awards. Deadline: 1 April and 1 November.

Natural Sciences and Engineering Research Council of Canada (NSERC) Postgraduate Scholarships (PGS) and Canada Graduate Scholarships (CGS) Value: CGS Master's \$17,500 for 1 yr; PGS Master's \$17,300 for 1 yr; CGS Doctoral \$35,000 for up to 3 yrs; PGS Doctoral \$21,000 for up to 3 yrs. Applicants must be Canadian citizens or permanent residents and hold a degree in science or engineering from a university acceptable to NSERC. Information regarding specific application requirements and application forms are available from the NSERC website: www.nserc.ca Completed applications must be submitted through the Department for ranking. Deadline: Application and all supporting documents must be forwarded to FGSR by 12 October.

NSERC Industrial Postgraduate Scholarship (IPS) Jointly funded by NSERC and an approved industrial sponsor. Value: \$21,000 (NSERC \$15,000; industrial sponsor \$6,000 minimum) for up to 2 years support. Nominees must be Canadian citizens or permanent residents of Canada living in Canada at the time of nomination and have a degree in science or in engineering from a university whose academic standing is acceptable to NSERC. IPS are intended to provide suitably qualified graduates in the science or engineering fields to acquire a higher degree through training that is specifically oriented to the interests of Canadian industry. Awards will be based on specific research proposals involving a student, a faculty supervisor and a collaborating company. The proposed research must be in one of the fields supported by NSERC. Information regarding specific application requirements and application forms are available from the NSERC website: www.nserc.ca. Deadline: There are no NSERC deadlines for this program, but candidates are encouraged to submit their applications early.

Social Sciences and Humanities Research Council (SSHRC) Doctoral Fellowships and CGS Value: CGS \$35,000/yr for 3 years; SSHRC doctoral fellowship \$19,000 for 8-48 months. Canadian citizens or permanent residents in a doctoral program in the field of humanities and social sciences. Information regarding specific application requirements and application forms are available from the SSHRC website: www.sshrc.ca Completed applications must be submitted through the Department. Deadline: Application and all supporting documents must be forwarded to FGSR by 1 November.

SSHRC Master's Scholarships (CGS Program) Value: \$17,500 (non-renewable). Canadian citizens or permanent residents in a masters program in the field of humanities and social sciences. Information regarding specific application requirements and application forms are available from the SSHRC website: www.sshrc.ca. Completed applications must be submitted through the Department. Deadline: Application and all supporting documents must be forwarded to FGSR by 10 June.

For other external agency scholarships, please refer to <http://www.gradstudies.ualberta.ca/awardsfunding/scholarships/externalawards.htm>.

Scholarships and Fellowships from the University of Alberta

FGSR Recruitment Scholarships

There is no application form; eligible students are considered on the recommendation of the admitting Department. FGSR makes the final decision. Decisions for the awards will be made on a monthly basis, starting in December each year, and the process will be repeated until all of the awards are allocated.

FS Chia PhD Scholarship Awarded to superior foreign students who are being newly admitted into a PhD program in the Fall or Winter Term of the competition year. Students who are transferring into a PhD program (effective September of the competition year) from a master's program within 12 months of commencing the master's program and no more than 12 months prior to the year of the scholarship nomination also are eligible. Students who have completed 12 or more months in any doctoral program are not eligible. Value: Offered for one year with a possible 12-month renewal year pending satisfactory academic standing and recommendation from the student's supervisor. Years 1 and 2: \$24,000 per year plus tuition and fees for Fall Term and Winter Term for both years. In addition, the department guarantees that a recipient will receive continued funding, from any combination of sources, for years 3 and 4 of the doctoral program based on the rates for Graduate Assistantship appointments for 12 hours per week non Principal Instructor doctoral students. Recipients are required to provide teaching assistance to the Department in years 1 and 2. Approximately 12 new awards are offered each year.

U of A PhD Scholarship Awarded to superior Canadian citizens or permanent residents who are being newly admitted into a PhD program in the Fall or Winter Term of the competition year. Value: Offered for a one-year term, with a possible 12-month renewal year pending satisfactory academic standing and recommendation from the student's supervisor. Years 1 and 2: \$24,000 per year plus tuition and fees for Fall Term and Winter Term for both years. In addition, the department guarantees that a recipient will receive continued funding, from any combination of sources, for years 3 and 4 of the doctoral program based on the rates for Graduate Assistantship appointments for 12 hours per week non Principal Instructor doctoral students. Recipients are required to provide teaching assistance to the Department in years 1 and 2. Approximately 12 new awards are offered each year.

Provost Doctoral Entrance Award Awarded annually to students newly admitted to a PhD program or to students from a master's program who subsequently have a change of category to a PhD program within 1 year of the initial admission. Selection will be based on academic standing and levels of financial support. Winners or honorary winners of Walter H Johns Graduate Fellowships, winners of scholarships with a tuition component, or students whose tuition will be paid by third parties (government, etc) are not eligible for this award. Value: approximately \$4,400 for Canadian citizens or permanent residents and \$8,000 for foreign students. The award is offered for one year with the possibility of renewal for a second year. Renewals are contingent on academic standing and the student's funding.

U of A Master's Scholarship Awarded to superior Canadian citizens, permanent residents or foreign students who are being newly admitted into a thesis-based master's program in the Fall or Winter Term of the competition year. Students who have completed any work in a master's program are not eligible. Value: Offered for a one-year term at a value of \$17,000 plus tuition and fees for the first Fall Term and Winter Term of the master's program. In addition, the department guarantees that a recipient will receive continued funding, from any combination of sources, for year 2 of the master's program based on the rates for Graduate Assistantship appointments for 12 hours per week non Principal Instructor master's students. Recipients are required to provide teaching assistance to the Department in year 1. Approximately 12 awards are offered each year.

U of A Course-based Master's Scholarship Awarded to superior Canadian citizens, permanent residents or foreign students who are being newly admitted to the University of Alberta in the Fall or

Winter Term of the competition year, and who will be registered full-time in a course-based master's degree program with a clearly defined research component. Students who have completed any work in a master's program are not eligible. Value: Offered for a one-year term at a value of \$13,000 plus tuition and fees for the first Fall Term and Winter Term of the master's program. Two new awards are offered each year. Deadline: March 14.

FGSR General Awards

FGSR awards approximately 140 fellowships, ranging from \$5,000 to \$22,000. Applicants are assessed according to a combination of departmental evaluation and recommendation, academic record, letters of appraisal, statement of program, applicant's research, potential contributions to research, and other technical experience. There is one competition annually for these awards. The application and supporting documentation must be sent directly to the Department. Departmental deadlines for receipt of awards application documents will generally be several weeks before the 1 February FGSR deadline. Awards applications are compiled and reviewed by the Department, which in turn makes a recommendation to the Graduate Scholarship Committee. Departments have limits on the number of nominations they can put forward. The Graduate Scholarship Committee makes a final assessment and decision.

Andrew Stewart Memorial Graduate Prize Value: \$5,000. Available to full-time PhD candidates who have completed two or more years of their PhD program and are actively engaged in thesis research. Major scholarship holders may apply unless restricted by the granting agency. A student may hold the award only once. All fields are eligible for funding, there are no restrictions on citizenship, and 25 awards are granted each year. Selection is based partly on academic merit, but research accomplishment while registered in a doctoral program at the U of A is the major criterion.

Dissertation Fellowship Value: \$22,000 plus tuition and fees during the Fall and Winter Terms. Designed for students who have a firm expectation of completing a doctoral program within 12 months following tenure. Recipients must commence their tenure between 1 May and 1 October, and must pass their candidacy examinations before taking up the award. No other duties, teaching or otherwise, may be undertaken, and recipients must be working full-time on their program. Recipients are not eligible for any further assistance from scholarship or assistantship funds after the conclusion of the 12-month tenure. No restrictions on citizenship. All fields are eligible for funding. Approximately 30 awards are granted each year.

Izaak Walton Killam Memorial Scholarship Value: \$27,000 per year plus tuition and fees during the Fall and Winter Terms plus \$700 plus a one-time \$2,000 research grant. Offered to outstanding students registered in, or admissible to, a doctoral program. Applicants must have completed at least one year of graduate work before start of tenure. Granted for two years (subject to review after the first year). Tenure to begin 1 May or 1 September. No restrictions on citizenship. All fields are eligible for funding. Approximately 20 awards granted each year.

Queen Elizabeth II Graduate Scholarship (Doctoral) Value: \$15,000 (September 1st start); \$7,500 (January 1st start), depending on eligibility. Candidates must have completed at least one year of graduate study and be registered in a full-time doctoral program. Applicants must be Canadian citizens or permanent residents at the date of application. Approximately 70 awards are granted each year. Recipients of major awards are not permitted to concurrently hold a Queen Elizabeth II Graduate Scholarship.

Queen Elizabeth II Graduate Scholarship (Master's) Value: \$10,800 (September 1st start); \$5,400 (January 1st start), depending on eligibility. Students must be entering or continuing in a full-time master's program. Applicants must be Canadian citizens or permanent residents at the date of application. All fields are eligible for funding. Approximately 80 awards are granted each year. Recipients of major awards are not permitted to concurrently hold a Queen Elizabeth II Graduate Scholarship.

FGSR Travel Awards

Mary Louise Imrie Graduate Student Award or J Gordin Kaplan Graduate Student Award

Value: \$200 - \$600 for MSc; \$200 - \$800 for PhD students. For travel within Alberta from \$200 to \$300 maximum. For travel to BC, MB or SK up to \$500 maximum. The trip should be a highlight of the student's research program and will involve attendance at a major national or international research gathering where the student must be actively participating by presenting a paper or poster session, exhibiting work, or participating in a panel discussion.

Travel awards are offered on a first-come, first-serve basis. The FGSR will offer as many travel awards as the endowments will support.

Application and additional information at forms are available at the FGSR website at:

<http://www.gradstudies.ualberta.ca/awardsfunding/scholarships/travel/index.htm>.

Walter H Johns Graduate Fellowship Value: \$4949. Awarded to students registered full-time in a graduate degree program who are receiving a major scholarship with a value less than \$30,000 from NSERC, SSHRC, or CIHR. Effective September 2006 NSERC IPS award recipients are no longer eligible. The full award will be offered to students holding an eligible scholarship for both the Fall and Winter Terms. One-half of the award value will be offered to students holding an eligible scholarship for only one four-month term (Fall Term or Winter Term) of an academic year. Application form is available at the FGSR website www.gradstudies.ualberta.ca/awardsfunding/scholarships/walterhjohns/index.htm. Deadline to FGSR: 5 September; 5 January.

Departmental Recruitment Scholarships

Al Brennan Memorial Graduate Scholarship in Forestry Value: \$13,000; Eligibility: Awarded annually to a graduate student who is studying Wood Science, Forest Engineering, Forest Genetics, Growth and Yield, Forest Management, Forest Business Management, or Forest Economics in a MF, MSc, PhD, or MBA/MF program at the U of A and whose research is relative to the forest industry in Alberta. There is no application form; eligible students will automatically be considered jointly by the Department of Renewable Resources and the Department of Rural Economy. (offered by alternate department starting 2002 with Rural Economy). Deadline: 1 June.

West Fraser Timber Graduate Scholarship in Enhanced Forest Management Value: Two awards @ \$5,000 each. Funds are intended to recruit MSc or PhD students with excellent academic backgrounds and high research potential in the fields of **silviculture, forest genetics, management, growth and yield, protection or other areas related to sustaining and enhancing the forest resources of Alberta**. Proposals will be evaluated as they are received, and awards made until the funds have been disbursed.

Specialized Awards

John and Patricia Schlosser Environment Scholarship Value: \$10,000. Awarded annually to a student in a graduate degree program whose research, scholarship or creative work is judged to be a most outstanding contribution to our understanding, appreciation or amelioration of our earthly environment. 1 June for submission of nominations from departments to FGSR.

Dr. Ian GW Corns Memorial Scholarship Value: \$1,000. Awarded annually to a student registered full-time in a graduate degree program in the Department of Renewable Resources (with particular interest in soil science and forest ecology). Part-time students are eligible for this award.

Desmond I Crossley Memorial Scholarship Value: \$13,800. Awarded annually to a student in a graduate degree program in Agricultural, Life & Environmental Sciences with a particular interest in Forest Management or Silviculture. Awarded on the basis of academic achievement and a perceived appreciation of forest management, as exemplified by the late Dr Crossley. The scholarship will not be awarded unless a suitable candidate is available.

Herbert and Jeannette Hall Graduate Scholarship in Forestry Value: \$3,300. Offered annually on the basis of academic merit to a student entering or continuing in a graduate degree program in forestry.

WorleyParsons Komex Graduate Scholarship in Soil Science Value: \$1,000. Awarded annually to a full-time student registered in a MSc or PhD program in the Department of Renewable Resources who is conducting research in the area of soil science. The recipient will be selected on the basis of academic excellence. Part-time students are eligible for the scholarship.

Henry Kroeger Memorial Graduate Scholarship Value: \$3,600. Awarded annually to two graduate students of superior academic ability whose research is in the area of soil and water resources as directed towards the enhancement of rural life in Western Canada and Alberta in particular. Recipients may be in the field of agricultural engineering, civil engineering, geography, geology, plant science, rural economy or soil science as it relates to soil conservation, water resources management, and irrigation.

Max MacLaggan Scholarship Value: \$3,100. Awarded annually to a student in a graduate degree program in forestry with particular interest in forest renewal or forest operations.

William H McCardell Memorial Scholarship in Forest Science Value: \$2,800. Offered annually to a student in a graduate degree program in the field of forestry. Preference may be given to students with particular interest in Forest Ecology or Wildland Recreation.

Donald A Shaw Memorial Graduate Scholarship Value: \$5,000. Awarded annually to a student registered in a graduate degree program in the area of Bioresource and Food Engineering or Land Reclamation and Remediation. There is no application form; eligible students will be considered jointly by Agricultural, Food and Nutritional Science and Renewable Resources. One recommended applicant from either Department will be forwarded to FGSR.

Bill Shostak Wildlife Award Value: \$10,000. Awarded annually to a full-time doctoral student at the U of A to research the conservation and management of fish and wildlife in any or all of the provinces of Alberta, British Columbia and Saskatchewan. Applicants must have completed at least one year of a related PhD program at the U of A. Awarded on the basis of academic achievement and desire to communicate effectively with the general public concerning the results of fish and wildlife research and conservation. Preference will be given to students whose program emphasizes the identification and timely correction of problems affecting conservation and management of fish and wildlife. Applicants must be Canadian citizens or permanent residents.

Rogers Sugar Ltd Scholarship Value: \$500. Awarded to a student in a graduate degree program whose research is related to irrigation farming.

Specialized Awards Adjudicated by ALES

The Associate Dean (Research) Faculty of Agricultural, Life & Environmental Sciences (ALES) will request one nomination from each Department by 1 August and **select one nomination** to FGSR.

Margaret (Peg) Brown Award in Environmental Studies and Wildlife Resources Value: \$2,000. Awarded annually to a graduate student in Agricultural, Life & Environmental Sciences whose academic and/or research interest is in the area of wildlife conservation and environmental studies. Selection will be made on the basis of superior academic achievement and research potential. Recipients should be Canadian citizens or permanent residents.

MacAllister Scholarship in Agriculture Value: \$1,500. Awarded annually to a student in a graduate degree program in agriculture who is a Canadian citizen or permanent resident and has good academic standing. Students may apply for a second award. Part-time students are eligible for this award.

Syngenta Graduate Scholarship in Sustainable Agriculture Value: \$2,000. Awarded annually to a student registered full-time in the second year of a PhD program in the Departments of AFNS, Renewable Resources, or Rural Economy whose research pertains to sustainable agriculture, which is defined as a balance between social, environmental and economic priorities. Projects may include environmental quality and resources management, land management, introduction of new technologies, economic viability and rural community sustainability.