

ORIENTATION FOR NEW POSTGRADUATE STUDENTS IN BIOSYSTEMS ENGINEERING

BIOE 7290 Biosystems Engineering Seminar

September 2017

1. STEPS IN OBTAINING A POST-GRADUATE DEGREE

Graduate students are expected to select their courses in consultation with their advisors or major professors. The minimum number of credit-hours (ch) of course work for various degree programs in Biosystems Engineering is given in the calendar under Biosystems Engineering in the Faculty of Graduate Studies section and as of 2013, both the M.Sc. and Ph.D. programmes require successful completion of 12 ch.

- 1.1 All graduate students must register for and complete GRAD 7500 Academic Integrity Tutorial in their first year of study. This is a zero (0) credit-hour course intended to introduce students to their basic responsibilities regarding academic integrity and to the resources available to them. This course runs entirely online and is comprised of a series of brief videos (the total duration of these videos is approximately 1 hour) followed by a true/false test.
- 1.2 The Faculty of Graduate Studies requires:
 - (a) a minimum cumulative grade point average (GPA) of 3.00 (B) with no grade below C+, and
 - (b) students are also required to demonstrate satisfactory academic performance in areas not related to courses (e.g. attendance and participation in seminars, research progress, thesis, and paper writing).
 - (d) the student's advisor (for M.Sc. students) or Committee (for Ph.D. students) must submit annually (usually by June) Progress Report which is a form describing the student's progress and stating whether the progress is satisfactory. The student cannot reregister in September without a satisfactory progress report submitted to the Faculty of Graduate Studies. Also, at the very beginning of the graduate program, the student and a professor need to fill out an online Advisor Student Guidelines (ASG) form. This form is designed to provide a framework for discussion between the advisor and a graduate student registered in the program.
- 1.3 Continuation of assistantships provided by the Department of Biosystems Engineering or thesis advisors (and positive letters of recommendation to future employers, etc.) encourages that graduate students:
 - (a) maintain a minimum cumulative GPA of 3.5 (B+) in course work, and
 - (b) show acceptable progress in their theses research projects.

Professor's assessment of your progress is important when letters of reference are requested.

- 1.4 A student planning to continue into a Ph.D. programme after completing M.Sc. must demonstrate a superior performance in credit courses; an ability to carry out independent original research; and an ability to communicate adequately in oral and written English.

Students making exceptional progress while enrolled in the M.Sc. program may request within 18 months to transfer to the Ph.D. program upon the consent of the department head and based on recommendation from the student's advisory committee, which assesses the student's qualifications and suitability for Ph.D. studies. In such cases, to be eligible, the student must have completed a minimum of 2 courses with a minimum GPA of 3.75. If transfer is approved, the student will be required to complete a total of 24 ch of courses, 18 ch of which must be at the 7000 level with a balance of the coursework at the 3000 level or higher. All other requirements of the Ph.D. program must be met.

- 1.5 Many postgraduate students receive research assistantships, which are paid from research grants or contracts held by professors. We expect M.Sc. students to complete their programmes in a maximum of 18 to 24 months and Ph.D. students in 36 to 48 months. Therefore, students are expected to work only on their thesis research and not pick-up other employment without discussing with their advisor. Occasionally, however, the Department or the student's advisor may request students to carry out work not related to their theses to fulfill the deliverables of the grant funds which are used to support them.
- 1.6 Normally, we expect our graduate students to work on their degree requirements throughout the year including during the summer months. Students are allowed some vacation each year. In consultation with their advisors, students should determine the length and timing of their vacations several weeks before they wish to start their vacations.
- 1.7 Thesis topics should be selected as early as possible.
- 1.8 Students are expected to arrange weekly meetings with their advisor.
Remember, it is your degree - you are most affected if your research is slow.
- 1.9 Try to do some literature review each week.
- 1.10 Clarify and check everything with your advisor concerning availability of equipment and funds to conduct your research.
- 1.11 If a certain piece of equipment or material is required, and your advisor has agreed to purchase it, then follow the following procedure:
 - 1.11.1 After you discuss the purchase with your advisor, send electronically your request to Ms Heather Innis in the department office and cc your advisor. If have you received a quote or work estimate, always include it with the purchase request. Some purchasing can go through the Department technicians, Mr. Dale Burns or Mr. Matt McDonald.
 - 1.11.2 If your request is for small items that can be obtained from the university stores, follow the same procedure.

- 1.11.3 When items are received from outside suppliers or stores; the material or equipment must be thoroughly checked and tested. The packaging slip should be given to Ms Heather Innis within 48 h. You may also include the bill of lading.
 - 1.11.4 In exceptional cases, out of pocket purchases will be reimbursed with permission of your advisor. Submit original receipts to Ms Heather Innis for reimbursement.
 - 1.11.5 **Do not make any purchase for your research without an official purchase order, or permission to use the Department's credit card or permission to use cash for the specific item.**
- 1.12 Postgraduate students may use tools and equipment available in the Department after receiving appropriate permission and instruction. It is your thesis and Degree that are jeopardized by incorrect data or broken equipment that cannot be repaired inexpensively or quickly.
- 1.12.1 Postgraduate students are encouraged and expected to construct their research equipment whenever it is possible, except where precision or complicated work is involved.
 - 1.12.2 Before using a machine, obtain permission and instruction from the Department Technicians or whoever is responsible for a particular room, laboratory, or machine. It is up to you to determine the correct person to contact. If you are not sure, talk to your advisor.
 - 1.12.3 Everyone working in the machine shop is required to wear safety glasses and toe caps, which are supplied by the technicians.
 - 1.12.4 For your safety, students are not allowed to work alone when using equipment.
 - 1.12.5 Instruction manuals of such equipment as compression machines, freeze dryers, centrifuges, gas chromatographs, etc. **must** be read and completely understood before using the equipment. Do not depend only on the instructions of other students.
 - 1.12.6 Tools **must** be charged out through the respective lab in-charge.
 - 1.12.7 Be organized and plan ahead. Several weeks notice must be given when the assistance of the Department Technicians is required in the design, construction, computer programming, repair, etc. of your research equipment. They attempt to fulfill requests in the order that they are received, although other factors may affect their work plans. Email your request rather than showing up in the lab without prior appointment. As a general rule, technician's assistance in teaching undergraduate courses have priority over research needs.
 - 1.12.8 When you require the assistance of one of the technicians to fabricate your research equipment, they require detailed drawings with accurate measurements.
 - 1.12.9 At the end of every work day, return tools to their proper location and clean up the area in which you are working.
- 1.13 Become well informed of steps to be taken during an accident or emergency including WHMIS (Workplace Hazardous Materials Information System) procedures. All Biosystems laboratories (Engineering and the Agricultural Engineering Building) have Material Safety Data Sheets (MSDS) describing the handling of any hazardous materials that are present in the laboratory available at the laboratory doors. The sheets provide

information on the chemical's properties and recommended first aid measures. Know the dangers and first aid measures for any material that you are using or that is present in the laboratory. Be prepared to act correctly in any emergency affecting yourself or others in the building. Rehearse in your mind what you have to do in different emergencies.

- 1.14 Arrange for the use of vehicles through the department general office. You must have a valid Manitoba/Canada Driver's License. **Before you will be allowed to use the vehicles, you must leave a photocopy of your Manitoba Driver's License in the Biosystems Engineering office.** Vehicles are to be reserved ahead of time. The first driver in the morning should check the oil, water, fuel, etc. When finished with the vehicle, be sure that it has at least 1/4 tank of gasoline. Immediately pass on credit card receipts and be sure to inform Mr. Bourns of any possible problems with the vehicle. If you are in an accident, contact the police, Autopac insurance, the University Security Service, Mr. Bourns, and your advisor. University vehicles must not be used for any private purpose such as moving furniture. If you are late returning the vehicle, call the Department office.
- 1.15 Postgraduate students can do their own photocopying in the Biosystems Engineering general office after they are taught how to operate the multi-function copier. Arrange photocopying through your advisor. The machine is to be used only by the members of the Department solely for academic/research work. The machine should not be made available to friends.

2. RESPONSIBILITIES OF THE GRADUATE STUDENT

- 2.1 It is the responsibility of all students to familiarize themselves each year with the information provided in the University of Manitoba Graduate Calendar. If there is any disagreement between this handout and the University Calendar, the Calendar contains the official regulations and takes precedence.
- 2.2 Graduate student study carrels may be available to graduate students, if needed, on first-come-first-serve basis. Please see Ms Heather Innis for availability. Neatness and tidiness are important in postgraduate student offices, laboratories and the lounge. Keep your laboratory benches neat, tidy, and clean. The janitor does not normally dust lab benches. They only clean what is on the floor. Tidying the bench/table top is your responsibility.
- 2.3 Announcements, press releases, scientific articles, and interviews based on or connected to your research and study activities at the University of Manitoba must come through your advisor.
- 2.4 Do not request typing of personal letters or reports forming a part of your course requirements, etc. Give a minimum of one to two weeks notice if you require letters of reference or proof of attendance from the Department when applying for visa extensions and other purposes.

- 2.5 Occasional theft takes place on our campus. Lock all doors in the Agricultural or Engineering Buildings, especially exit doors, after 5:00 pm and on weekends. Admittance to the Building at these times is limited to staff, postgraduate and undergraduate students (spouses and friends can accompany you **infrequently**) and other authorized people. If at any time you feel uneasy about the presence of a person, contact University Security Service or phone 204-474-9341. The University does not reimburse you for the loss of any personal goods.
- 2.6 Lights should be turned off when leaving in the evening the Agricultural Engineering Bldg. except for the light in the main entry lobby. The same applies to other buildings.
- 2.7 Under no circumstances are you permitted to share with anyone the access codes or swipe cards to Department's facilities. This includes, and is not limited to, other graduate and undergraduate students in the program. Report any breakage of equipment or accidents to your advisor and Mr. Derek Inglis in the Agricultural Engineering Bldg.
- 2.8 The student is responsible for completing the degree requirements within an acceptable time. The maximum time allowed for the completion of the M.Sc. degree is four years for students declared as full-time and six years for students declared as part-time. Full-time Ph.D. students must complete their degree within six years.
- 2.9 Study hard and enjoy your university experience.

3. SERVICES AVAILABLE TO GRADUATE STUDENTS

3.1 Library

Some journals, theses, etc. are in the Biosystems Engineering Library (Room E2-376 EITC) but the majority of pertinent journals are in the Engineering Library (current issues and issues of the last 4 years), Agriculture Reading Room, Science Library (journal issues more than 4 years old), or Elizabeth Dafoe Library. Pertinent publications include: Transactions of the ASAE, Applied Engineering in Agriculture, Standards of ASAE, Agricultural Engineering Abstracts, Agricultural Engineering Index, Journal of Agricultural Engineering Research (JAER), Biosystems Engineering which is the continuation of the JAER, Canadian Biosystems Engineering, Agricultural Engineering (Australia), International Journal of Farm Building Research, Agricultural Engineer (a British journal), Landtechnik, Farm Machine Design, Engineering Journal, International Institute of Refrigeration Bulletin, Engineering Education, Journal of Stored Product Research, Energy, Fuel, Biomass & Bioenergy, Renewable Energy, Bioresource Technology. Copies of all conference papers of ASAE/ASABE since 1968 and of CSAE/CSBE since 1976 are available on websites of these two organization. In recent years, subscriptions to many journals have been cancelled, therefore, journals of recent years may not be available in the library system. You can use inter-library loans for most articles or books, but it takes time. Copies of theses (till 2016) written by former undergraduate and postgraduate students in Agricultural Engineering or Biosystems Engineering are available in the Biosystems Engineering Library (Rm. E1-351). All ASAE or CSAE

members and student members have access to online published articles in Transactions of the ASAE, Applied Engineering in Agriculture, and Canadian Biosystems Engineering.

3.2 **Recreation**

Swimming, skating, gymnasiums, tennis, racquetball, squash, indoor track, wall climbing, etc. are available at the Active Living Centre and the Max Bell Centre.

3.3 **Food**

Cafeterias are located in University Centre, Pembina Hall, and the Colleges.

3.4 **Student Clubs**

On campus, students can join the Graduate Students' Association, International Students' Organization, and the Biosystems Engineering Students Club. Students are encouraged to join and take part in technical societies such as the Canadian Society for Bioengineering (CSBE), American Society of Agricultural and Biological Engineers (ASABE), and Canadian Institute of Food Science and Technology (CIFST). Canadian and landed immigrants are encouraged to apply for Engineer-in-training status in the Association of Professional Engineers and Geoscientists of the Province of Manitoba (APEGM).

3.5 **Study Space**

Please note that assigned study space cannot be guaranteed. Some study space is under the control of the Department of Biosystems Engineering and is assigned by Ms Heather Innis in the Biosystems Engineering office; additional spaces may be available through the Dean's Office (Faculty of Engineering). Please contact Ms Heather Innis for assistance in obtaining study space. Eligibility for space is determined based on the following criteria:

- M.Sc. students are eligible for space for a maximum period of 27 months from the date of their first registration
- Ph.D. students are eligible for space for a maximum period of 51 months from the date of their first registration
- M.Eng. students are not eligible for space for a maximum of 15 months from the date of their first registration

Space is of two types: study carrels and laboratory. Some graduate students are assigned a study space in their advisor's laboratory; in other cases, students are assigned study carrels somewhere in the engineering complex (including the Agricultural Engineering Building and Human Ecology Building).

3.6 **Telephone**

You will have access to a telephone in your advisor's laboratory. Access to a telephone in your office space cannot be guaranteed. Please familiarized yourself on how to use the intercom to transfer calls to other labs.

You must never unplug a telephone in any of our University buildings. If a telephone is to be moved, contact Ms Heather Innis in the Department office. Where several

postgraduate students are on a single line, please do not monopolize the phone. Long distance calls should be made from a pay phone or personal cell. Check the phone book before requesting directory assistance from the operator. Students, with permission and assistance from Department office staff, can make use of the Fax machine in Room E2-376 EITC. Long distance charges for the Fax must be paid in advance.

3.7 **Computers**

Access to a desktop computer is not guaranteed. You should check with your advisor whether a computer is available for you to use in either the laboratory or your assigned office space. Access to a laser printer may be provided in your advisor's laboratory. Your advisor is responsible for providing toner for the printers and paper for printing. **Please note that inappropriate use of computer facilities can lead to suspension or permanent denial of computer use privileges. Some examples of inappropriate use of computer facilities include: peer-to-peer file sharing services, removal of anti-virus software, downloading of pirated movies & music, and installation of illegal software/services/games on department computers. These activities put a great burden on the time of our technicians and may put others at risk.**

The email and Internet services are provided by the University. To use the University's central Unix system, you need to claim a student userid by a procedure set out by Information Services & Technology (IST).

Workshops related to using computer operating systems, and available software packages, including Microsoft Office Suite are available to students for free or for a low user fee. The University IST centre also offers various training courses on using computers and computer software. A listing of the courses and a form for registering in the courses is usually available in August or September each year.

3.8 **Post Office and Pharmacy**

Located on the first floor of the University Centre across the hall from the University Bookstore.

3.9 **University Health Service**

A family practice clinic is located in room 104 University Centre. Their phone number is 8411 from the Campus landline.

3.10 **Police**

Campus security is located in the Welcome Centre at 423 University Crescent. Phone 474-9312.

3.11 **Fire and Emergency**

Phone: **555** (from the Campus landline); **911** (from off Campus)

For other emergency services and phone numbers (e.g. Suicide crisis line, 24 hour service: 204-786-8686) see the inside front covers of the University and Winnipeg phone books.

Following a University related accident, complete and submit an Accident Report form that is available from the Departmental Office.

3.12 **Student Lounge**

Room 218 in the Agricultural Engineering Building is a staff and students' Lounge. There are two other graduate students' lounge areas located in: Rm. 303 Human Ecology Bldg. and E2-505, EITC Bldg.

4. **DEPARTMENTAL POLICY ON SERVICES FOR THESES**

4.1 **Typing, Drafting and Photography**

The cost of typing preliminary and final drafts of thesis manuscripts and the costs of photographs and drafting are the responsibility of the student. Whenever the manuscript and figures will be used in their entirety in an unabridged form as an internal progress report, a portion of the cost, usually one-half, may be charged to a grant or budget, funds permitting.

4.2 **Submission of the final copy Reproduction**

Following the completion of any revisions required by the committee, the thesis must be submitted to the Faculty of the Graduate Studies as one digital version submitted as an e-thesis at the MSpace website (<https://mspace.lib.umanitoba.ca/index.jsp>) with final approval and release forms.

Hard copies are no longer required, however, you may wish to have one bound copy for yourself. In this case, the costs of reproducing the manuscript and figures of the thesis are the responsibility of the student. The student is also responsible for binding charges.

5. **DEPARTMENTAL POLICY ON M.Sc. THESIS EXAMINATIONS**

5.1 **Purpose of the Thesis**

For the M.Sc. degree in Biosystems Engineering, the student's thesis should show that the student has mastery of the field; is fully conversant with the relevant literature; and has conducted original research.

5.2 **Advice in Research**

Students should avail themselves of all opportunities for discussion and advice in connection with their research. To obtain suggestions and constructive criticism students are encouraged to present seminars on their research prior to submission of their thesis.

5.3 **Purpose of the Oral Thesis Examination**

The purpose of the oral thesis examination is to examine the candidate's knowledge of the thesis subject and of matters relating thereto.

5.4 **Composition of the Thesis Examination Committee**

Thesis Examination Committees are composed of the Advisor and at least two additional faculty members: one from the Department (usually) and one from outside the Department of Biosystems Engineering. The Committee is selected by the Advisor. Other members of the academic staff of the Department can be present and ask questions but do not vote on the acceptance or rejection of the thesis.

5.5 **Format of the Oral Thesis Examination**

The format of the oral examination may vary but usually is as follows: A professor from the department, who is not a member of the examination committee, is appointed Chair by the Department Head. The Chair of the Committee introduces the student, describes the examination procedure, and asks the student to present an outline of the research project and results. The time allocated for the student's presentation shall normally be between 20 and 30 min.

Following the oral presentation, the Chair of the Committee asks for questions from members of the Committee, usually starting with the member external to the Department of Biosystems Engineering. The Committee members direct their questions to the student according to the procedure outlined by the Chair.

A common procedure in Biosystems Engineering, is for committee members to begin by asking general questions related to the oral presentation. Normally this involves recognition by the Chair of each Committee member according to a sequence determined by the Chair. At the end of the questioning by the Committee, the Chair permits questions from other members of the academic staff who are not members of the Committee and from students and others in the audience. Following this period of general questioning most of the audience usually leaves while the committee then questions the candidate on the details of the thesis. The question period is normally 30 to 90 min.

At the end of the examination, the Chair of the Committee asks the candidate and all academic staff and guests who are not members of the Committee to withdraw. The Thesis Examination Committee then reaches a decision as described in the General Calendar. (The Committee may postpone reaching a decision pending further work by the candidate). After the Committee has met, the candidate is invited back into the examination room to hear the decision. Normally, the Committee requires the candidate to make changes in the thesis before it is accepted.