

Food, Agricultural, and Biological Engineering

Graduate Handbook

2008-2009 Edition

Food, Agricultural, and Biological Engineering

Graduate Program

The Ohio State University

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Dear New Graduate Student:

Welcome to The Ohio State University. You have chosen one of the premiere universities in the world to continue your educational career and I am glad you have chosen The Department of Food, Agricultural and Biological Engineering (FABE) for your graduate studies. The Department of Food, Agricultural & Biological Engineering takes great pride in its people, programs and facilities. The people who comprise the faculty and staff are knowledgeable about the university, department and programs and will provide direction and support to you throughout your career at Ohio State. The graduate program is a major contributor of research in agricultural and biological engineering and has leading programs in the nation in these areas.

As a graduate student you will work closely with faculty on research activities while pursuing your academic degree. You will have opportunities to learn about and understand basic, independent research; to synthesize and interpret data; to conceptualize new ideas, articulate them, and turn your ideas into realities. During your graduate education at FABE, you will actively participate in integrating the knowledge from the classroom activities into your research projects, engage in teaching opportunities, develop peer contacts, and participate in seminars and professional meetings. You will also be able to apply the knowledge you've gained in the classroom in technology transfer activities and learn how adoption of your project may be accomplished outside of the university setting.

As you encounter new learning opportunities, strive to use the resources at your disposal. The university has much to offer and you have much to contribute. Look for ways to utilize both of these attributes as you learn about Ohio State, and the Department of Food, Agricultural and Biological Engineering. I am sure the faculty and staff in the department are all eager to see you succeed as a graduate student in the department.

If you have any suggestions concerning the graduate program and the department please do not hesitate to let me know. Again, welcome and best wishes!

Sincerely,



Dr. Thomas L. Bean
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1. Department Overview

The Ohio State University is a national leader in undergraduate and graduate education in food, agricultural and biological engineering. We invite you to explore the excellent resources and unique opportunities at Ohio State.

In FABE, we have a unique combination of exceptional facilities, talented faculty and students, and challenging research programs. We are fortunate to be able to collaborate with outstanding faculty, not only within the College of Engineering and the College of Food, Agriculture and Environmental Sciences, but, around the world.

A Department recognized for it's...

- High national ranking and international reputation
- Successful graduate students with opportunities in well-appointed positions in academia, industry and government
- First class engineers, scientists, researchers and teachers
- High faculty-to-student ratio
- Ability to design degree
- Modern facilities
- Multidisciplinary research opportunities
- Availability of financial assistance
- Diversity and multi-disciplinary research opportunities
- Integrated research and extension

Areas of research focus include...

- Agricultural Systems Operations & Management
- Mechanical Systems Engineering
- Food & Process Engineering
- Ecological Engineering
- Plant & Animal Environment Engineering
- Soil & Water, Environmental and Biological Engineering

The following is a link to a list of faculty members, with their current areas of research:

<http://www.oardc.ohio-state.edu/fabe/graduatestudies/Faculty.htm>

2. FABE Admission

Potential graduate students seeking admission to the OSU Graduate School for graduate study in the Department of Food, Agricultural and Biological Engineering must fulfill admission criteria established both by the OSU Graduate School and by the faculty of Food, Agricultural and Biological Engineering.

2.1. Application Process

The Graduate School application process is conducted partially online and partially by a paper process. Refer to the Graduate School Website for all application materials and specific instructions, <http://gradadmissions.osu.edu/>

Apply online at gradapply.osu.edu with the nonrefundable application fee (\$40).

The GRE General Test is required for all applicants. Test scores should be sent to the graduate school.

Two original copies of transcripts or record of marks for each university-level school attended, including English translation of each of any foreign documents. One copy must be sent to the Graduate School and the other sent directly to the FABE Graduate Studies Chair.

A Statement of Purpose must be sent to the FABE Graduate Studies Chair. In a brief and focused description, this statement should give background information concerning the factors which have stimulated your interest in science in general, and particularly in the sub-disciplines which comprise FABE. You should indicate which specific areas of specialization are most interesting to you as a possible focus for graduate research, and include information about previous undergraduate or graduate research experiences.

Three letters of recommendation, preferably on the standard form provided by OSU Graduate Admissions, from persons knowledgeable about the student's academic and/or research performance. The standard Ohio State Reference Forms found at http://admissions.osu.edu/apps/pdfs/int_refer.pdf. Letters of recommendation should be submitted to the FABE Graduate Studies Chair.

A curriculum vitae/resume of no more than two pages must be submitted to the FABE Graduate Studies Chair for all applicants who wish to be considered for a fellowship.

In addition to the above requirements, the Test of English as a Foreign Language (TOEFL) is required for all students whose native language is not English. Depending on the specific type of TOEFL examination taken the minimum score for each is different (paper based tests minimum is 550; for computer based it is 213; and iTOEFL is 69-70.) The higher the scores are above the minimum the better it is for recommendation for admission. The requirement may be waived if the student has earned a degree in an English-speaking country.

Students whose native or first language is not English are required to take the English Placement Exam prior to their initial course registration at OSU. The exam tests oral/verbal, vocabulary, grammar and writing skills to determine which courses, if any, are needed in order to meet basic levels of communication.

2.2. *Deadlines for Application*

Applications for FABE are accepted for any quarter, although applicants are encouraged to apply for Autumn Quarter admission. International students should seriously consider Summer Quarter admission, since this will permit them to gain experience with American English before the intensive Autumn Quarter coursework begins. Credentials of those who apply are evaluated without consideration of race, color, creed, sex, age, disability or national origin.

Although we are able to admit students quarterly, the process time varies, particularly when applying for Autumn Quarter admissions. This is the most common admission date throughout campus, and creates the highest volume of applications to be handled at both the Department and Graduate Admissions offices. Winter Quarter is also the period when most Fellowships competitions are held. In order to be considered for all admission opportunities, it is best for international students to apply in November and domestic students in December so that all the admissions materials are available for review, admission, fellowship competitions and other financial support can be considered for all applicants. This department makes the majority of its admissions decisions during Winter Quarter, so although you may apply later, it reduces your opportunities for admission or support.

Deadlines for the 2009 - 10 academic years are as follows:

Quarter	Application Deadline (Int'l)	Application Deadline (Domestic)	Classes Start
Summer 2009	May 15	May 1	June 22
Autumn 2009	Aug 15	July 1	Sept 23
Winter 2010	Dec 1	Nov 1	Jan 4
Spring 2010	March 1	Feb 1	Mar 29

2.3. Application Review Process

When a completed application is received, it is distributed to the FBE Graduate Studies Faculty for review. The applicant must be acceptable to at least one (1) FBE Graduate Faculty member who is willing to serve as adviser before the FBE Graduate Studies Committee can recommend the applicant for admission to the OSU Graduate School. Most admission decisions are made by the OSU Departments but when there are procedural questions or concerns the OSU Graduate School is consulted and their rulings are firm. Minimum acceptance material can be found in the Graduate Admissions material (<http://www.osu.edu/futurestudents>), and then follow the Graduate links. Applicants are encouraged to contact faculty members prior to applying to the department to learn more about opportunities with specific faculty.

Applicants who hold a B.S. degree in Engineering, but do not meet the minimum requirements for admission to the Graduate School, may be considered for admission. The following process is used to determining admission status of such applicants:

- (a) An Applicant's folder is sent to the graduate faculty whose research area most closely matches that of the student's interest. If no Graduate Faculty member agrees to accept the student as an advisee, admission to the Graduate Program is denied, and the Graduate School is notified of such.
- (b) If a Graduate Faculty member agrees to accept the student as an advisee, then the Faculty member is responsible for providing, in writing, compelling evidence beyond what is in the application package, that the student deserves admission to the

Graduate Program. The request and supporting materials are to be submitted to the Chair of the Graduate Studies Committee (CGSC).

(c) A subcommittee of 3 voting members of the GSC (excluding the Faculty member) shall be appointed by the Chair of the GSC to review the student's application file and the evidence provided by the Faculty member. The Chair of the GSC will designate a chair to manage the review. Every effort should be made to evaluate the case and present the report (see item d below) to the CGSC within 30 days.

(d) After evaluation and discussion of the student's case, the subcommittee will make a recommendation to either accept or not accept the student to the Graduate Program, by a simple majority vote. The Chair of the subcommittee will then prepare a report on the decision in the form of a letter explaining in detail why the subcommittee favored or opposed the student's admission. The decision report letter shall then be submitted to the CGSC.

(e) In the event of a negative recommendation, the CGSC will return the student's referral form to the Admissions Office indicating the student is not qualified for admission to the FABE Graduate Program.

(f) In the event of a positive recommendation on acceptance to the Graduate Program, the CGSC will in turn forward the subcommittee's letter to the Graduate School, which will make the final decision on whether or not the student should be admitted to the Graduate School.

The Food, Agricultural, and Biological Engineering (FABE) Graduate Program recognizes that the basic credentialing as an engineer in the discipline occurs at the B.S. degree level. Furthermore, it recognizes that students without such credentialing may benefit from advanced study in the FABE Graduate Program. Notice that completion of a graduate degree in the FABE Graduate Program does not guarantee credentialing as an engineer.

Applicants who do not hold a B.S. degree in Engineering, but who do meet the minimum requirements for admission to the Graduate School, may be considered for admission. The following process is used to determining admission status of such applicants:

(a) An Applicant's folder is sent to the graduate faculty whose research area most closely matches that of the student's interest. If no Graduate Faculty member agrees

to accept the student as an advisee, admission to the Graduate Program is denied, and the Graduate School is notified of such.

(b) When a Faculty member has agreed to accept the applicant as an advisee, he/she will submit a written request to the CGSC for a review of the student's application, and provide a list of proposed courses for the student, which should address the preparatory coursework requirements. It is the responsibility of the Faculty member to develop this list of preparatory courses in consultation with the student, and to make the student fully aware of these requirements, and their rationale.

(c) A subcommittee of 3 voting members of the GSC (including the Faculty member) shall be appointed by the CGSC to review the student's application. The materials to be reviewed should include the application file and the proposed set of preparatory courses. The CGSC will designate a chair to manage the review. Every effort should be made to evaluate the case and present the report to the CGSC within 30 days.

(d) The subcommittee's charge is to make a recommendation to the CGSC on the admission conditions for the student. After evaluation and discussion of the student's case, the subcommittee will approve the recommendation by a simple majority vote. The Chair of the subcommittee will then prepare a report on the recommendation in the form of a letter explaining in detail any conditions, such as all courses that the student is required to successfully complete, and the timing and minimum grade levels on specified courses as appropriate. (As a guide, a minimum of 15 additional credit hours of preparatory courses is recommended.) The recommendation report letter shall then be submitted to the CGSC.

(e) The CGSC will then notify the Graduate School in writing about the requirements of the student's conditional admission to the Graduate Program. The written notification should include the list of courses and other conditions that the student will be required to fulfill before starting and/or completing the proposed degree.

(f) Following admission to the FABE Graduate Program, conditions of admission may be changed in accordance to the rules outlined in the Graduate School Handbook (Section II.1.4.6). The decision to change these conditions, for example substituting a required course, will be made by the adviser, the CGSC, and one other voting member of the GSC.

3. Graduate Student Funding

3.1. Tuition

The actual tuition for Graduate Students in Engineering can be found on the University Registrars' Home Page (<http://www.ureg.ohio-state.edu>) in the Quick Links. The tuition rates for all areas are annually updated and determined by the OSU Board of Trustees. Information in these links also indicates the variety of expenses that a student is responsible to pay.

3.2. Graduate Associate Funding

A Graduate Associate is a working job title at The Ohio State University. Complete information regarding Graduate Associates can be found in Section IX of the Graduate School Handbook <http://gradsch.ohio-state.edu/> In the FABE department, students may be selected as Graduate Teaching Associates (GTAs), Graduate Research Associates (GRA's) or Graduate Administrative Associates (GAAs) based on their requested area of specialization, past research experience or other abilities. Appointment renewals are contingent on many factors, including the availability of funds and need for services as well as the student's satisfactory performance as a GA, satisfactory progress toward degree completion, and good standing in the Graduate School. Renewal is not guaranteed. Evaluation of GA performance will occur through periodic meetings between students and advisors and/or students and teaching faculty and staff. Decisions to renew GA contracts will be based on these evaluations. Typically, appointments are made for four quarters--autumn through summer, however, each student's funding situation is different and is awarded on a case-by-case basis. Often, a student's funding source may be changed during summer quarter (i.e., GTA to GRA) depending on available funding. Students entering the University in a quarter other than autumn will have their contracts issued beginning that quarter and extended until the upcoming autumn when contracts are re-issued. Students will be notified by letter prior to the beginning of the quarter to which they have been admitted of their award of a Graduate Associate Appointment. This letter includes instructions for accepting or denying the Appointment along with a deadline date for returning their signed acceptance. A Graduate Associate Appointment Document is also sent with this letter that describes the duties and responsibilities.

A GTA, GRA or GAA is committed to 20 hours of work, weekly, for the department, typically in exchange for tuition, engineering computer lab fees, a percentage of the health benefits, and a monthly living stipend. Although the actual dollar value of a stipend changes annually, the minimum stipend is an amount of money that is determined by the University to be sufficient for students to live in the Columbus, Ohio area, and attend college at The Ohio State

University. The range of stipend amounts is also based on funds available, research experience or other abilities.

Criteria and procedures for terminating GA appointments will follow those outlined in the Graduate School Handbook under IX.2 "*Termination Criteria*". Any grievances by a GA should be addressed to their advisor or the Graduate Studies Chair. However, if through these parties the problem cannot be resolved, a group of Department Graduate Faculty will be gathered to consider possible resolutions. If the problem is not resolved at the department level, the student and/or department may contact the Graduate School.

In most cases, GA's are provided with space to carry out their GA responsibilities including teaching, research or administrative duties.

3.2.1. Graduate Teaching Associate (GTA)

A Graduate Teaching Associate will have specified activities under the direction of the instructor of record, but the overall responsibilities include: working in the classroom, lecturing, grading, mentoring, tutoring, preparing materials for class, pre and post lab set-up and clean-up, and any other related activities required to accomplish these activities. Whenever possible, it is expected the GTA attend lectures, in order to be engaged in what has been taught in the lecture and to be effective at study sessions with students.

The GTA is an integral member of the educational team. Each GTA is assigned to a course taught in the Department, and they are expected to work closely and effectively with the instructor of record for that class. GTAs are to give the courses they teach or TA first priority, and schedule their coursework and research around their commitment to the department. These GTA responsibilities are in addition to any coursework that the GTA is required to take towards their own degree and their own research responsibilities.

Prior to the start of Fall Quarter, all new Graduate Teaching Associates are required to take a 4 day training provided by the Office of Faculty and Teaching Associate Development. Additional courses and seminars are offered through out the academic year, and are excellent opportunities for professional development.

Normally, further training is required for international students to successfully pass the English as a Second Language (ESL) Mock Teaching Test. Many of the courses through ESL include classroom teaching and management techniques as well as additional language support.

3.2.2. Graduate Research Associate (GRA)

A Graduate Research Associate is an active member of the research team. Responsibilities may include: conducting experiments; organizing or analyzing data; presenting findings in a publication or dissertation; collaborating with faculty in preparing publications; mentoring/coordinating work of other GRAs; and working on other related duties as assigned.

A GRA position requires students to work the committed amount of time for the research that is being done by the Department. This may or may not be research directly or indirectly related to the student's own research activities. As new students begin working in the OSU-FABE research laboratory they are required to take the Laboratory Safety Class offered through the Safety Group by the OSHA Coordinator in FABE. Standard research methods are used as well as specific research techniques used by the Adviser and other students in the specific labs in the department.

NOTE: Depending on departmental funding and needs of the faculty, a graduate student may hold a GTA, GRA, or GAA or some combination during his/her academic tenure in the Department.

3.2.3. Graduate Administrative Associate (GAA)

GAA's responsibilities will be specific and determined by the faculty or staff member to which the student is assigned. Duties may include assistance with the development, planning and implementation of a particular project, program or unit. The associateship may include clerical tasks, research of literature, development and maintenance of databases. Other duties as assigned.

3.2.2 Leaves of Absence

GRA's will schedule their activities as directed by their advisor. GTA's must be on campus to aid in their assigned courses(s) and follow the direction of the staff or faculty member leading the course(s). GA's requesting absences due to medical or other reasons should follow procedures in the Graduate Handbook, and consult with their advisor and the Graduate Studies Chair. Leaves of absence longer than 5 days will require the approval of the Chair of the FABE Department.

3.3. *Outside Employment*

GA's are discouraged from seeking outside employment. In extenuating circumstances, outside employment may be arranged for GRA's with approval from their advisor(s) and the Graduate Studies Chair.

3.4. *Fellowship*

A fellowship is an academic scholarship for which students throughout the university compete. The selection for competition is made by the FABE Graduate Studies Faculty. The submission for the University Fellowship competition is made by the department in early February and the selections are announced in early March. These Fellowships provide one or more years of academic support and the student is only responsible for their class-work and own research.

Fellowships are predominantly based on an applicant's high academic record, specifically GPA and GRE scores. A strong research record as well as outstanding student experiences also contribute to consideration.

The amount of the stipend for each fellowship varies tremendously depending on the source of the fellowship.

3.5. *Other sources of funding*

Individuals who are self supporting, may seek loans or financial support by exploring options through Student Financial Aid. The fees/tuition schedules are available at the University Registrar's office. Self-supporting students are only responsible for their coursework and their own research activities. International students are often financially supported by their home countries with various contract stipulations.

4. Degree Requirements

NOTE: The Graduate Handbook is separate from this department specific Handbook, and is available on the OSU Graduate School Homepage. Specific references to the Graduate School's Graduate Handbook are made throughout this section and can be accessed at <http://www.gradsch.ohio-state.edu>.

4.1. General Requirements

4.1.1. Adviser

On the FABE Homepage (<http://fabe.osu.edu>) there are links to the Department faculty's webpages. In many cases, applicants study the research areas and research publications before emailing the potential faculty adviser. By studying the research expertise of the potential Adviser, the applicant can often determine how closely their own research interests and goals match those they would like to work with. Students are then encouraged to contact potential faculty advisors prior to submitting an application to the department.

Other times the adviser may chose the applicant, based on carefully reading through the applicant's academic file, statement of purpose, and reference materials. In this Department no student is admitted until one faculty member agrees to be their adviser. The FABE Homepage has a direct link for information to the Graduate Program connects which connects to the Graduate Studies Coordinator's email address. This link provides a quick response to questions and concerns applicants have, as they navigate the application process. Often, faculty refer their applicant questions directly to Graduate Studies Coordinator.

The Adviser's responsibilities are to guide the student in planning a program of study and research suitable to the best interests of the student while meeting Graduate School and Departmental standards and objectives. The adviser shall supervise the graduate program of the student, and shall chair the committees for the thesis or the dissertation, the Candidacy Exam (Ph.D. only), and the Final Examination (MS and PhD). The approval of the adviser is required on most facets of the graduate program as detailed in the following sections of the guide.

4.1.2. Committee

The student's Graduate Advisory Committee should be appointed by the Adviser, in consultation with the student. This committee should have faculty who are knowledgeable about the research and who can provide balance, insight, and creativity to the research. Each

student's committee should be formed by the third quarter at OSU. The members of the committee should be asked by the student if they will commit to be on his/her committee. Committees may assist in developing a student's coursework plans and the direction of the proposed research.

The members of the committee will be the people judging the research in either the MS or PhD defense. For an MS Committee, there are at least 2 members with one being the student's adviser; although, it is not uncommon to have more members. The Master's Examination is administered under the auspices of the Graduate Studies Committee.

For a PhD Advisory Committee, the Advisory Committee is composed of at least four authorized graduate faculty members and may include the student's adviser consistent with Graduate Studies Committee policy (ref. II.6.4.4). The responsibility for the written portion of the Candidacy Examination rests with the Advisory Committee. Within the rules of the Graduate Studies Committee, other graduate faculty members may participate in generating, administering, or scoring parts of the written portion of the Candidacy Examination. Non-Graduate Faculty members may be appointed to the Advisory Committee by approval of the Graduate Studies Committee in the student's home program and by petition to the Graduate School. Non-Graduate Faculty are in addition to the required four, current Ohio State Graduate Faculty members.

4.1.3. Department Specific Course Requirements

Currently, the Department has 3 required courses: FABE 850-seminar, FABE 801-Research methods and FABE 999. FABE 850 is to be taken every quarter for credit unless there is a course conflict. Course credit is continuously given for FABE 850. FABE 999 research hours are to be taken each quarter by all students.

4.1.4. Academic Standards

The Department follows the academic standards of the Graduate School as specified in the Graduate School Handbook (Part II, Section 4). A FABE graduate student who, in the opinion of his/her adviser, is not making reasonable progress toward the degree shall be reviewed by the GSC. If the GSC concurs, its chair shall recommend to the Dean of the Graduate School that the student be denied further registration in FABE. The minimum GPA for Graduate School is 3.0.

4.2. Master of Science (M.S.) Degree Requirements

The Master's degree requires 30 credit hours (based on a quarter system) of course work from disciplines that meet the needs of your research specialty, and a minimum of 15 credit hours of thesis research. (FABE 999).

In the course of your program, you will be required to prepare and orally defend a thesis based on your research. Students require approximately two years to complete the Master of Science degree.

4.2.1. Course Requirements

Each quarter (a ten week course period with a week of finals the eleventh week) students are expected to enroll for a total of 18 credit hours. Since each student has a course curriculum tailor-made for them, the number of actual coursework credit hours each quarter is determined by the student and adviser. The remaining balance of hours is to be reached by using FABE 999 Thesis Research.

4.2.2. Thesis Requirement

There are two MS options. The Plan A thesis requires a minimum of 45 credit hours which is a research based program. The Plan B (non-thesis) requires a minimum of 50 credit hours. The Plan B option is most frequently used when students are full time employees.

4.2.3. Final Oral Exam

An oral Master's Examination is held after the submission and preliminary approval of the thesis. The examination is conducted by a committee composed of the adviser (as chair) and at least one other member of the Graduate Faculty, who may be from another OSU department. The responsibility of completing all of the forms required for the Master's Examination that are to be signed by the GSC Chair falls under the responsibility of the Adviser.

Department policy permits other faculty and graduate students to attend the oral examination if the following provisions are met:

- At the time that the examination is scheduled, the departmental administrative assistant or designee notifies the faculty and graduate students of the examination.

- Those faculty and graduate students who wish to attend the oral examination shall notify the student's adviser at least 24 hours before the exam.
- The level of participation of non-committee members shall be in accordance with Graduate School rules and within the discretion of the student's adviser.

During the first quarter of enrollment, the Plan A student should discuss research opportunities with the adviser and by the end of the second quarter prepare a written research proposal for the thesis. The purposes of early research topic definition are: (1) to provide focus to the student's program, (2) to allow the adviser and the Department Chair to plan and manage resources, and (3) to permit the student and adviser time to acquire proper instrumentation. Classroom learning and research discovery should proceed concurrently throughout the entire program.

4.2.4. Time limit

The Department has a six-year limit on all MS programs; no credits earned prior to six years before award of the degree may be used to meet its requirements.

4.3. Doctor of Philosophy (Ph.D.) Requirements

You will conduct original research and prepare a dissertation, then make an oral defense of your completed research before your examination committee. Students require about three to four years beyond the Master's degree to complete a Ph.D. program. Procedures and requirements for the Ph.D. degree are detailed in Part II Section 6 of the Graduate Student Handbook. The Department does not require preliminary or qualifying examinations. No foreign language is required.

4.3.1. Candidacy Exam

It is the responsibility of the Graduate Student in the quarter of their Candidacy Examination to learn what they need to do in order to graduate, understand the deadlines, options, and forms necessary for graduation. The Graduate School emails through a PDF file the appropriate forms for the exam to the Graduate Studies Coordinator. Attendance at the oral portion of the exam is limited to the student and the members of the Examination Committee. Successful completion of the Candidacy Examination requires a unanimously affirmative decision by the Committee. After satisfactory completion of the Candidacy Exam the student may be admitted to candidacy for the doctoral degree which

signifies that the student is judged to be properly prepared to undertake work on the dissertation.

4.3.2. Course Requirements

A minimum of 120 graduate credit hours is required beyond the B.S. degree of which 90 hours are for courses, not including FABE 999. Only 45 hours are allowed for the M.S. degree, unless the degree was received from OSU and the student's Advisory Committee approves additional hours. Course credit hours should normally be divided among (1) Food, Agricultural & Biological Engineering courses (including 999 and 850), (2) basic science courses, and (3) courses that are specific to the student's area of specialization. All graduate students are required to take FABE 801, and PhD students are expected to take at least one additional graduate level FABE course (not including FABE 999 or 850). Additionally, it is highly recommended that students take FABE 810. Students shall develop their individual course of study in consultation with their adviser and the other members of the student's Graduate Advisory Committee. The coursework shall provide a concentration in a specific area, yet allow reasonable breadth of subject matter, being designed to foster both productive scholarship and knowledge of FABE in relation to allied fields.

Each quarter you are expected to enroll for a total of 18 credit hours. The number of actual course-work credit hours each quarter is determined based on your individual adviser, and the balance of 18 hours is FABE 999 Thesis Research.

The Doctorate degree requires a 45 credit hours of course work beyond the Master's degree and a minimum of 30 hours of research. It may be possible to pursue a doctoral program without receiving a Master of Science degree.

Each Ph.D. student is expected to assist in teaching one undergraduate course for one quarter unless he/she has had previous college teaching experience. The duties to be performed and the schedule for completing this requirement will be developed for each student in consultation with the adviser and the course instructor.

4.3.3. Time Limit

After completing the candidacy exam, a Ph.D. Candidate has five years to submit the final copy of the dissertation to the Graduate School or the candidacy is canceled. In such a case, with the approval of the adviser and the Graduate Studies Committee, the student may take a Supplemental Candidacy Examination. If this Supplemental Candidacy Examination is passed,

the student is readmitted to candidacy and then must complete the dissertation document within two years.

4.3.4. Thesis Requirements

Draft Approval (GSH II.6 12.5). The student must submit a complete, typed dissertation draft to the Dissertation Committee for review. Approving the dissertation draft means that the Dissertation Committee members judge it to be sufficient merit to warrant holding the Final Oral Examination. Each Dissertation Committee member indicates approval of the dissertation draft by signing the Draft Approval/Notification of Final Oral Examination form that must be submitted to the Graduate School no later than two weeks before the date of the Final Oral Examination. (GSH II.6.12.6) The student must submit the complete, typed dissertation draft to the Graduate School for format review at the time the Draft Approval form is submitted. The dissertation must conform to the graduate School format requirements as described in the Guidelines for Preparing Theses, Dissertations.

4.3.5. Final Oral Exam (Dissertation Defense)

Departmental policy permits university faculty and graduate students to attend the Ph.D. Final Oral Examination. Attendance at these examinations is subject to the same policies as the Master's Examination. These additional attendees may ask questions and provide comments only if permitted by the Examination Committee Chair. All additional attendees must notify the Chair of the Examination Committee of their intent to attend the Final Oral Examination at least one day prior to the examination and shall be excused when the candidate is excused for discussion, evaluation, and voting. The candidate will pass if there is no more than one negative vote cast by members of the Examination Committee.

5. Key Individuals in FABE Graduate Program

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5.1. Graduate Studies Committee

The Graduate Studies Committee (GSC) in FABE is composed of the members of the Graduate Faculty in the Department who wish to serve on the Committee, and two FABE graduate students (an M.S. and a Ph.D. representative) who are elected by the FABE Graduate Student Council to represent them. The Chair of the Graduate Studies Committee is elected by the FABE graduate faculty for a four-year term. The staff member designated as assistant to the CGSC serves as secretary to the committee.

The roles and responsibilities of the GSC are defined in the Graduate Schools Handbook.

6. General Administrative Information

6.1. Computer Access

The FABE Department provides desktop computers for each graduate student, as well as a cubicle office area. These computers are connected to the internet by a wireless connection, to the University internet. The computers are set up to be able to connect to the Engineering Lab using a remote desktop connection.

Additionally, Engineering graduate students are granted access to the College of Engineering computer lab on the first floor of the Ag Engineering building. Instructions for accessing your account for the first time are posted in the computer lab.

7. Department And University Resources And Policies

7.1. Code of Student Conduct

The Code of Student Conduct lists a variety of activities which are under the topic of Academic Misconduct. Among the variety of topics is included an explanation of plagiarism, and consequences. Citing or referencing material at OSU could be different than your previous experience, and reviewing the standards and expectations at OSU is encouraged.
<http://www.oaa.osu.edu/coam/home.html>.

7.2. Human Resources

Explanation of payroll procedures, instructions to set up a direct deposit account, payroll deductions can be found at <http://www.hr.osu.edu/payroll>.

Graduate Student health insurance and the policies for Graduate Associates can be found at <http://www.shi.osu.edu>.