



THE OHIO STATE UNIVERSITY

Food, Agricultural, and Biological Engineering

Graduate Handbook

2017-18 Edition

Food, Agricultural, and Biological Engineering

Graduate Program

The Ohio State University

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1. Department Overview

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 and it can be accessed at <http://www.gradsch.ohio-state.edu>

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.

Founded in 1908, the Department of Food, Agricultural and Biological Engineering (FABE) has a unique combination of research facilities located in Columbus and Wooster, Ohio. The Department also has access to the facilities of the Ohio Agricultural Research Development Center (OARDC). Our faculty and graduate students share a wide range of diversity in their research interests and cultural backgrounds which enrich the educational experience.

The Department, an ABET-accredited program, is associated with the College of Engineering (COE) and the College of Food, Agricultural and Environmental Science (CFAES).

A Department that is recognized for its...

- High national ranking in *U.S. News and World Report* 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
- Multidisciplinary research opportunities
- Availability of financial assistance
- Diversity and multi-disciplinary research opportunities
- Integrated research and extension

Areas of research focus include...

- Agrichemical Application Technology
- Agricultural Water Management
- Air Quality
- Bioengineering
- Composting
- Ecological Engineering
- Food & Process Engineering
- Greenhouse Engineering
- Mechanical Systems Engineering
- Safety Systems and Agricultural Safety

- Soil & Water
- Wastewater and Solid Waste Management

The following is a link to research being conducted in our department:

<http://fabe.osu.edu/research>

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 by both the OSU Graduate School and by the faculty of FABE.

2.1 Application Process

The application process is conducted online. Refer to the Graduate Admissions website for all application materials and specific instructions, <http://gradadmissions.osu.edu/> An application file is made up of an application, Graduate Record Exam (GRE) test scores, transcripts from all colleges/universities attended, a statement of purpose (SOP), a resume (vita), and 3 letters of reference. Applicants must have a minimum of a 3.0 cumulative point-hour ratio (on the 4.0 scale used at this university) in all previous undergraduate and graduate work. International students are required to submit Test of English as a Foreign Language (TOEFL) scores unless you have received a bachelor's degree or higher from an English-speaking country.

- Apply online at <http://gradadmissions.osu.edu/> and pay the nonrefundable application fee of \$60 for domestic students and \$70 for international students. Complete application instructions can be found at: <http://admissions.osu.edu/apps/pdfs/q-info.pdf> Frequently asked questions are listed here: <https://qpadmissions.osu.edu/faq/>
- The GRE General Test is required for all applicants. To send test scores use OSU's institutional code of **1592**.
- Order official transcripts from ALL institutions you have attended and earned college credit – even if it was earned while attending a high school. Request that institutions mail official transcripts directly to you. Delete your Social Security Number before scanning your transcripts as image files to attach to your online application. **Note:** Ohio State students do not have to submit Ohio State transcripts.
- A Statement of Purpose (SOP) can uploaded at the time of application. In a brief and focused description, the SOP 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 (LOR) from persons knowledgeable about the applicant's academic and/or research performance are needed. Use OSU's electronic system for submitting references at the time of application.
- A curriculum vitae/resume of no more than two pages must be submitted as well.
- In addition to the above requirements, the 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 79.) 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. The institutional code for OSU is **1592**.

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

We are able to admit students each semester following a rolling admission policy and will accept applications at any time. The process time varies, particularly when applying for Autumn Semester 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. Spring Semester is also the period when most fellowship competitions are held. In order to be considered for all admission opportunities, it is best for international students to apply by **November 30** and domestic students by **December 13**, so

that all the admissions materials are available for review, admission, fellowship competitions and other financial support can be considered for all applicants.

Deadlines for the 2018 academic year are as follows:

Applying	Spring-SP 2018	Summer-SU 2018	Autumn-AU 2018
Domestic	October 1, 2017	February 1, 2018	March 1, 2018
International	October 1, 2017	February 1, 2018	March 1, 2018

2.3. Application Review Process

When a completed application is received, it is distributed to the FABE Graduate Studies Faculty for review. The applicant must be acceptable to at least one FABE Graduate Faculty member who is willing to serve as adviser before the FABE 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. 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 a faculty member does not agree to accept the student as an advisee, admission to the FABE 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 Graduate 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 FABE, 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 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. 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 a faculty member does not agree 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 10 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 FBE 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' website <http://registrar.osu.edu/FeeTables/MainFeeTables.asp> 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 (GSH) <http://gradsch.osu.edu/graduate-school-handbook1.html> In the FASE 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, the need for services, 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 advisers and/or students and teaching faculty and staff. Decisions to renew GA contracts will be based on these evaluations. GA's are employees of the University/Department and are required to fulfill the responsibilities and requirements as stated in the appointment form and conduct themselves in a professional manner.

Typically, appointments are made for three terms--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 term (i.e., GTA to GRA) depending on available funding. 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. Students entering the University in a semester other than autumn will have their contracts issued beginning that semester and extended until the upcoming autumn when contracts are re-issued. Students will be notified by letter prior to the beginning of the semester 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 per week in exchange for tuition, computer lab fees, a percentage of the student's 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 GSH under IX.2. Grievances held by a GA should be addressed to their adviser 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.

3.2.1. Graduate Teaching Associate (GTA)

A Graduate Teaching Associate will have specified activities under the direction of the instructor he/she is assigned to, 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 that the GTA will attend lectures in order to be effective at study sessions with students.

The GTA is an integral member of the educational team. They are to give first priority to their TA duties 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 Semester, all new GTA's are encouraged to take part in the three day workshop *Teaching Orientation @ Ohio State*. This training is provided by the University Center for the Advancement of Teaching (UCAT) <http://ucat.osu.edu/> Additional courses and seminars are offered by UCAT throughout the academic year and are excellent opportunities for professional development in the area of teaching. All FABE GTA's will be required to take the Title IX Training. <http://titleix.osu.edu/>

For an international student to become a GTA, further training is normally required to successfully pass the English as a Second Language (ESL) Mock Teaching Test (Speak Test). Many of the courses through ESL <http://www.esl.ohio-state.edu/> include classroom teaching and management techniques as well as additional language support.

3.2.2. Graduate Research Associate (GRA)

A GRA 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 a minimum of 20 hours per week on the research that is being done by the faculty adviser. This may or may not be research directly or indirectly related to the student's own research activities. Standard research methods are used as well as specific research techniques used by the adviser and other students in research specific labs. As new students begin working in FABE research laboratories they are required to take the 10 hour Laboratory Safety Class through Environmental Health and Safety <http://ehs.osu.edu/Training/Default.aspx>

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, maintenance of databases and other duties as assigned.

3.3. Leaves of Absence

GRA's will schedule their activities as directed by their adviser. 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 adviser, the Graduate Program Coordinator or the Graduate Studies Chair. Leaves of absence longer than 5 days will require a Leave of Absence Form approved by the student's adviser, GSC, and the Chair of the FABE Department.

3.4. 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 adviser and the Graduate Studies Chair.

3.5. Fellowships

Fellowships can be internal, OSU, or external, through private, federal or state funding agencies. In the past, our students have been successful in acquiring external fellowships through the National Science Foundation (NSF), Department of Energy (DOE), Environmental Protection Agency (EPA), and various private and industrial groups. FABE faculty support the efforts of students seeking these external fellowships.

An OSU University Fellowship is an academic scholarship for which applicants are nominated throughout the University. These fellowships provide one or more years of academic support and the student is only responsible for their class-work and research. The **minimum** requirements a student should meet to be considered for a University Fellowship are a GPA of at least 3.6 on a 4.0 scale (or equivalent on another scale), GRE scores must be a 75th percentile average of the verbal and quantitative components and 4.0 on the analytical writing component. Submission of candidates for the University Fellowship competition is made by the FABE Graduate Studies Faculty. Students wanting to be considered for the fellowship competition should have their application packet completed by November 14 for international students and December 12 for domestic students. Fellowship selections are announced by the Graduate School in February.

The Presidential Fellowship provides financial support so that each Presidential fellow may devote one year of full-time study to the completion of his or her dissertation or degree project unimpeded by other duties. Competitions are held autumn and spring semesters. Students are nominated by their faculty advisers.

3.6. 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 website <http://registrar.osu.edu/FeeTables/MainFeeTables.asp> 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

4.1. Adviser

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 (M.S. and Ph.D.). The approval of the adviser is required on most facets of the graduate program as detailed in the following sections of the guide.

On the FABE Homepage (<http://fabe.osu.edu>) on the "Our People" tab there are links to the Department's faculty 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 of faculty they would like to work with. The adviser may choose the applicant, based on carefully reading through the applicant's file. A student is not admitted until a faculty member agrees to be his/her adviser.

The FABE homepage provides a link to connect prospective students to the Graduate Program Coordinator. This provides a quick response to questions and concerns applicants have, as they navigate the application process.

4.2. 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 second term 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, it is composed of at least four authorized graduate faculty members and may include the student's adviser consistent with Graduate Studies Committee policy (GSH VII.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 and by

petition to the Graduate School. Non-graduate faculty are in addition to the required four, current Ohio State Graduate Faculty members.

4.3. Department Specific Course Requirements

Currently, the Department has 4 required courses for the Master's degree and 5 for the Ph.D. program. Those courses for the Master's degree are FABENG 7890—Seminar, FABENG 7210—Research Methods, plus 2 additional FABENG courses of choice. The required courses for the Ph.D. program are FABENG 7890—Seminar, FABENG 7210—Research Methods, plus 3 additional courses of choice. In order to register for Research Methods, you will need to meet with your adviser regarding your research topic and have begun development of a thesis proposal. If you have not decided on your thesis research area, you are not able to take FABENG 7210 and will have to wait until the following year to take the course. FABENG 7890 is to be taken every semester for credit unless there is a course conflict. Course credit is continuously given for FABENG 7890. FABENG research hours (6999 and 8999) are to be taken each term by all students.

4.4. 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.

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

The Master's degree requires 20 credit hours (based on a semester system) of course work from disciplines that meet the needs of your research specialty, and a minimum of 10 credit hours of thesis research (FABE 6999). Outside of FABE, courses 4000 or higher and inside FABE 5000 or higher count toward your degree. The Department does not require preliminary or qualifying examinations. No foreign language is required.

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. The GSH outlines Master's degree requirements under section VI <http://gradsch.osu.edu/section-vi.html>

5.1 Course Requirements

Each semester (a 14 week course period), students are expected to enroll for a total of 18 credit hours--for summer term 8 hours are required. Since each student has a course curriculum tailor-made for them, the number of actual coursework credit hours each semester is determined by the student and adviser. Students are required to take FABE 7210 Research Methods and two additional FABE courses sometime during their program. Additionally, each semester, students are required to register for FABE 7890 Graduate Seminar. The remaining number of hours for the semester is to be reached by using FABE 6999 Thesis Research. It is suggested that FABE graduate students requiring a statistics course take CHBE 5779: Experimental Design.

5.2. Thesis Requirements

There are two MS options. The Plan A thesis requires a minimum of 30 credit hours (20 course credit hours and 10 research—FABENG 6999 hours) which is a research based program. The Plan B (non-thesis) requires a minimum of 23 course credit hours—33 hours total. The master's examination for a student pursuing the non-thesis option must include a written portion and may include an oral portion. The Plan B option is most frequently used when students are full time employees.

5.3. 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. If a committee member needs to attend the exam through video conferencing, guidelines can be found at <https://gradsch.osu.edu/handbook/b-video-conferencing-exams>. 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 Graduate Program Coordinator or designee notifies the Department's 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 semester of enrollment, the Plan A student should discuss research opportunities with the adviser and by the end of the second semester 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.

5.4. 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.

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

Students will conduct original research and prepare a dissertation. An oral defense of the completed research will take place before the student's 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 GSH VII <http://gradsch.osu.edu/section-vii.html> The Department does not require preliminary or qualifying examinations. No foreign language is required.

6.1. Candidacy Exam

The candidacy examination is a single examination consisting of two portions, written and oral. 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. Satisfactory completion of the Candidacy Exam admits the student to candidacy for the doctoral degree which signifies that he or she is judged to be properly prepared to undertake work on the dissertation.

The oral portion of the candidacy examination lasts approximately two hours and is held after completion of the written portion. The oral portion normally must be completed within one month of the written portion. The Graduate School must be notified at least two weeks in advance of the oral's proposed time and place by the submission of an Application for Candidacy Exam form. The candidacy examination must take place during announced university business hours, Monday through Friday. Post-candidacy doctoral students must

enroll for at least three credit hours (full time). Post-candidacy doctoral students must also fulfill the post-candidacy residency requirement of a minimum of six graduate credit hours over a period of at least two semesters or one semester and summer session after admission to candidacy.

6.2. Course Requirements

A minimum of 80 graduate credit hours is required beyond the B.S. degree of which 60 hours are for courses, not including research hours. Thirty hours of a master's degree can be transferred as a block of credit to a Ph.D. program, unless the degree was received from OSU and then the student's Advisory Committee can approve additional hours. Course credit hours should normally be divided among Food, Agricultural & Biological Engineering courses (including FABENG 8999 Research and FABENG 7890 Graduate Seminar), basic science courses, and courses that are specific to the student's area of specialization. All graduate students are required to take FABENG 7210 Research Methods, and PhD students are expected to take at least five additional graduate level FABENG courses (5000 or above--not including FABENG 8999 or 7210) sometime during their program. Each semester, students are required to register for FABENG 7890 Graduate Seminar. Students shall develop their individual course of study (form located at the end of this document) 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 semester, a student is expected to enroll in 18 credit hours--for summer term 8 hours are required. The number of actual course-work credit hours each semester is determined based on your individual adviser, and the balance of 18 hours is FABENG 8999 Dissertation Research. It is suggested that FABE graduate students requiring a statistics course take CHBE 5779: Experimental Design.

The Doctorate degree requires a 30 credit hours of course work beyond the Master's degree and a minimum of 20 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 term 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.

6.3. 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.

6.4. Dissertation 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 of 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.

6.5. Final Oral Exam (Dissertation Defense)

Departmental policy permits university faculty and graduate students to attend Ph.D. Final Oral Examinations. 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.

6.6. 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 Organization (GSO) to represent them. The Chair of the Graduate Studies Committee is elected by the FABE graduate faculty for a four-year term. The roles and responsibilities of the

GSC are defined in the Graduate School Handbook. The staff member designated as Graduate Program Coordinator serves as secretary to the committee.

7. Computer Access

The FABE Department provides desktop computers for each graduate student, as well as a cubicle office space. 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 Agricultural Engineering Building. Instructions for accessing your account for the first time are posted in the computer lab.

8. 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 from your previous experience, and reviewing the standards and expectations at OSU is encouraged.
<http://studentaffairs.osu.edu/csc/>

9. 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>

10. Key Individuals in FABE Graduate Program

Candy McBride, Graduate Program Coordinator

Phone: (614) 292-1851

FAX: (614) 292-9448

E-Mail: mcbride.215@osu.edu

Dr. Sudhir Sastry, Graduate Studies Chair

Phone: 614.292-3508

FAX: 614.292.9448

E-mail: sastry.2@osu.edu

Revised October 2015

Plan of Study Form

MS Degree: FABE

(Must be approved before the end of the second semester)

Thesis Option—Plan A: Requires a minimum of 30 credit hours which is a research based program. 20 credit hours of course work from disciplines that meet the needs of your research specialty, and a minimum of 10 credit hours of thesis research (FABENG 6999).

Non-Thesis Option—Plan B: Requires a minimum of 33 credit hours.

Department Requirements: A minimum of 4 courses offered in the Department of FABE.

Course	Credit Hrs.	Semester - Year	Grade
FABENG 7210	3		
FABENG 7890			
Total Dept. Hrs.	3		

Electives: List the elective courses to fulfill the 20 total course hours and 10 hours of research (thesis option) or a minimum of 33 credit hour for (non-thesis).

Course	Credit Hrs.	Semester - Year	
Total Elective Hours	0		
TOTAL HOURS	3		

Expected Date of Graduation _____

Student _____	Date _____
Advisor _____	Date _____
Graduate Studies Chair _____	Date _____
Committee Member _____	Date _____
Committee Member _____	Date _____
Committee Member _____	Date _____

