Department of Food Science & Technology

Graduate Student Handbook

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(Updated 8/12)

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I. INTRODUCTORY INFORMATION

A. Relationship to the Graduate School Handbook .

This handbook supplements the Graduate School Handbook . It outlines specific rules, procedures, policies and requirements that apply to graduate students, faculty and programs in the Food Science and Technology graduate program. Reference is made to the appropriate section of the Graduate School Handbook when rules are identical.

B. Degrees Offered and Areas of Specialization.

The Department offers programs leading to the Master of Science (M.S.) degree and the Doctor of Philosophy (Ph.D.) degree with options as follows:

M.S. Degree: Food Science and Technology.

For the M.S. Degree, both thesis and non-thesis plans are available. M.S.-Non-thesis is intended as a terminal degree.

Ph.D. Degree: Food Science and Technology

C. Department Faculty and Their Research Areas

Additional information on faculty can be found on the departmental website at: www.fst.osu.edu. The following faculty members serve as advisors and members of students' advisory committees.

Valente B. Alvarez, *alvarez.23@osu.edu*. Dairy and food processing, research and Extension. Industry-related research projects on new technologies, product development, ingredient functionality, product quality and shelf life. Food safety, GMPs and HACCP training.

Bala Balasubramaniam, *balasubramaniam.1@osu.edu* Food engineering with emphasis on microbial safety, Pasteurization and sterilization aspects of advanced food technologies such as high pressure processing. Kinetic models for bacterial destruction; In-situ food property measurement under pressure; establishing criteria for safe processing parameters for novel food processing technologies for pathogen reduction.

Sheryl A. Barringer, *barringer.11@osu.edu* Flavor volatiles. Coatings: electrostatic, nonelectrostatic, liquid and powder. Fruit and vegetable processing, especially tomatoes. Dielectric properties.

M. Monica Giusti, *giusti.6@osu.edu* Functional foods, phytonutrients, natural colorants. Anthocyanins as natural colorants, isoflavones as phytoestrogens, and other phenolic compounds.

Incidence, chemistry, analytical techniques, food applications and potential biological activity.

W. James Harper, *harper.9@osu.edu* J.T. Stubby Parker Endowed Chair in Dairy Foods. Flavor and functionality of dairy products.

Ronald D. Harris, *harris.568@osu.edu.* Food Product Development, Management of R&D, Decision Sciences, Operations Management. Adjunct. Not a primary graduate advisor.

Dennis R. Heldman, *@osu.edu.* Dale A. Seiberling Endowed Professor in Food Engineering. Food engineering, with emphasis on process design to achieve maximum efficiency and optimum product quality. Application of simulation models to ensure food safety, while improving product quality attributes.

Gonul Kaletunc, *kaletunc.1@osu.edu* Physical properties of pre and post processed foods and bio materials. Courtesy with Food Ag Bio Eng.

Lynn Knipe, *knipe.1@osu.edu* Processed meat extension for the Ohio meat industry. Muscle quality and ingredient functionality in further processed meats. Meat product safety, particularly intervention practices against pathogens in production, retail, food service, and consumer handling and preparation.

Jiyoung Lee *jlee@cph.osu.edu* Environmental and food microbiology. Rapid detection of pathogens and spores. Microbial contamination in water: sources, transport and fate. New fecal indicators. Renewable energy from waste. Seafood safety and aquaculture. Global health. Joint appointment in the Department of Environmental Health Sciences, College of Public Health.

Ken Lee, *lee.133@osu.edu* Mineral nutrient interactions in processed foods. Food safety and food security.

Jeffrey T. LeJeune, *lejeune.3@osu.edu* Preharvest control of food borne pathogens. Shiga toxin-producing E. coli, Salmonella, Campylobacter, and antibiotic resistant bacteria. Courtesy with Food Animal Health.

Jianrong Li, *Li.926@osu.edu* Food and waterborne viruses, viral detection, food safety, viral replication and gene expression, vaccine and anti-viral drug development. Joint appointment in the Department of Environmental Health Sciences, College of Public Health.

John H. Litchfield, *litchfield.3@osu.edu* Industrial microbiology and enzyme technology. Adjunct. Not a primary graduate advisor.

Farnaz Maleky, *@osu.edu.* Material Science of Food, Nano-engineering of Food Systems, Food Structuring and Process Development, Mathematical Modeling of Food Physical Processes, Lipid Crystallization, Physical Chemistry of Lipid, Mechanical and Structural Properties of Lipid.

Michael E. Mangino, *mangino.2@osu.edu* Protein structure to function in food proteins. Emeritus. Not a primary graduate advisor.

Melvin Pascall, *pascall.1@osu.edu* Food packaging with emphasis on integrity, modified atmospheric packaging, nano technology and plastics, migration/scalping and packaging material sanitization and food safety.

Luis E. Rodriguez-Saona, *rodriguez-saona.1@osu.edu* Application of Fourier Transform infrared (FT-NIR and mid-IR) spectroscopy in the field of food safety and quality assurance. Topics of interest are the development of predictive models for the rapid detection, identification and classification of chemical & microbial contaminants and food components with biological activity.

Linda Saif, *saif.2@osu.edu* Development of vaccines to enteric and respiratory viruses. Diagnosis of enteric viral infections in animals that may be relevant to food. Courtesy with Food Animal Health

Sudhir K. Sastry, *sastry.2@osu.edu* Mathematical modeling of heat transfer and verification of chemically heated products. Courtesy with Food Ag Bio Eng.

Steven Schwartz, *schwartz.177@osu.edu* Carl E. Haas Endowed Chair. Carotenoids, phytochemicals and functional foods related to chronic disease prevention. Faculty member in Food Science and OSU Interdisciplinary Graduate Program in Nutrition & Comprehensive Cancer Center.

Yael Vodovotz, *vodovotz.1@osu.edu* Bread staling, physico-chemical properties of carbohydrate systems and functional foods, water mobility and functional properties of food components, material properties of biopolymers and bioplastics

Hua Wang, *wang.707@osu.edu* Antibiotic resistance; microbial ecosystems in foods and hosts; biofilms; lactic acid bacteria and *Listeria monocytogenes*; rapid detection of food borne pathogens and spoilage microorganisms.

Macdonald Wick, *wick.13@osu.edu* Meat biochemistry, Courtesy appointment with Animal Sciences.

S.T. Yang, *yang.15@osu.edu* Fermentation and bioseparation research, bio reactor design, enzyme technology and metabolic engineering. Courtesy with Chem Eng.

Ahmed E. Yousef, y*ousef.1@osu.edu* Food microbiology and microbial safety of food processed by novel technology.

II. GRADUATE STUDIES COMMITTEE

The Department's Graduate Studies Committee is selected and operates according to the rules of the Graduate School Handbook .

A. Graduate Faculty Membership

The faculty elects the Graduate Studies Committee Chair for a three-year term. Upon petition by five members of the faculty, an election for the Chair can be held. The Department Chair appoints the members of the Committee as recommended by the Graduate Studies Committee Chair.

In addition to the Chair, the Graduate Studies Committee consists of the department chair, one senior faculty member, one junior faculty member, and one other member. Committee members serve for two years and may be reappointed.

B. Role and Responsibility

The role and responsibility of the Department's Graduate Studies Committee are listed in the Graduate School Handbook .

C. Petition/Appeal Process

Petition/Appeals by students regarding the Department's graduate programs, policies and rules must be made in writing to the Graduate Studies Committee. If necessary, the Committee will conduct a hearing with the student and the student's advisor. The outcome will be reported in writing to the parties involved.

Should the student decide to continue the Petition/Appeal to the Executive Committee of the Graduate Council, the Graduate Studies Committee Chair will report the Committee's position to the Executive Committee.

III. ADMISSION

Departmental graduate admission policies and procedures follow those of the OSU Graduate School and the University. Additional specific information is listed below:

A. Criteria and Credentials

To enter the graduate program, students must have at least one semester of college level calculus, biology, microbiology and physics, chemistry through organic chemistry, and biochemistry, or have obtained the equivalent through training or experience.

The GRE general test, with appropriate evidence of performance, is required of all applicants.

Admission to graduate school is competitive. Average scores for our current students are 56th percentile verbal, 78th percentile quantitative, 48th percentile written with an undergraduate GPA of 3.4. The minimum GPA for admission is 3.0 (on a 4-point scale) in all previous undergraduate and graduate work. Applicants with lower graduate grade-point averages may be admitted conditionally, by petition to the Graduate School. Past performance in basic science courses (math, chemistry, physics), scores in the analytical and written portions of the GRE, as well as recommendations from previous instructors or advisors, are important criteria for admission.

Qualified students may be denied admission when their academic goals conflict with those of the Department and when advisors, space and facilities to accommodate the students are unavailable.

Students who wish to transfer to the Food Science and Technology Graduate Program from another academic unit must meet the admission criteria listed above. A student wishing to transfer must submit a letter from a faculty member stating which faculty member will serve as the student's advisor. Graduate-level courses completed in the other academic units are accepted toward the Food Science and Technology degree if these courses meet the Food Science and Technology program requirements.

To apply, students must fill out an on-line application form and have their GRE scores, TOEFL scores (if applicable) and an official copy of their transcripts from all university-level schools attended sent directly to the OSU Graduate Admissions Office. Upload (3) letters of recommendation and your Statement of Intent. The letters of recommendation should be on company letterhead. The letter of intent should describe the area of research you would like to pursue, as well as any relevant internships or research experience you have had.

B. Application Deadlines.

Application deadlines for admission to the Department are those set by the University. All application material must be submitted by the deadline to assure a decision regarding admission for the desired semester. Fellowship deadline is November 30 for international applicants, January 7 for domestic applicants.

IV. ADVISOR

A. Assignment of Advisor

Graduate students are assigned an advisor once admitted into the program. The Graduate Studies Committee Chair will serve as temporary advisor if the student does not have an assigned advisor.

When a student wishes to change his/her advisor, the consent of both the present and the

prospective advisors should be obtained. The Graduate Studies Committee should be informed in writing. If consent of one or both advisors cannot be obtained, the student may petition the Committee in writing. Action of the Committee will be based on consultation with the student and his/her advisor.

B. Role and Responsibility.

The graduate advisor provides counsel and advice to the student on course selections, program development, selection and execution of research or Individual Study problems and all other student requests requiring assistance.

Early in the student's program, an additional two-member Advisory Committee will be appointed upon recommendation of the advisor and student and approval of the Graduate Studies Committee. The Advisory Committee serves to: (l) approve the student's course program and changes in the program; (2) consult on progress in research; and (3) participate on the student's Examination Committee. ***All students must have their course program approved by their Advisory Committee before the end of the first semester of enrollment.*** A copy of the approved course program must be provided to the Graduate Studies Committee Chair. Students who fail to meet this requirement will be denied further registration.

V. COURSE REGISTRATION AND SCHEDULING

The Department's rules with respect to registration, scheduling, course load, and changes in schedule are the same as those stated in the Graduate School Handbook. Everywhere in this document, credit hours means graduate-level credits only (5000 and above in FST, 4000 and above in other departments). Undergraduate credits do not meet department or University requirements. English as a second language courses do not meet department requirements (any courses in EDUTL)

In this Department, 18 credit hours per semester is considered a full-time course load. All graduate Fellows, GRA'S and GTA'S must enroll for a minimum of 18 credit hours per semester.

The Department shall maintain a file on each student and it must contain: all application materials; a record of the student's academic performance at The Ohio State University; copies of the approved course schedule and research proposal; copies of all official correspondence and forms from, to, or about the student from the advisor, the Graduate Studies Committee, the Department, the Graduate School, and other faculty members and administrative units of the University.

VI. COURSE CREDIT, MARKS, POINT-HOUR RATIO

A. Course Credit

Rules in the Graduate School Handbook apply.

B. Marks

Rules in the Graduate School Handbook apply with the exception that EM credit may be earned only in undergraduate courses. EM credit will be awarded for grade B or better performance.

All formal courses offered by the Department, Group Studies and Seminar are graded A-E. All Individual Studies and Research courses are graded S/U.

Credit for work at other institutions may be transferred as outlined in the Graduate School Handbook.

C. Point-Hour Ratio.

Rules in Graduate School Handbook apply. A course may be repeated with the advisor's approval when mastery of the subject matter is critical to the student's performance in major area courses and research, or if the grade in the course was the result of absence beyond the student's control.

A Fresh Start option may be granted to students enrolling after a five-year absence upon petition to the Graduate Studies Committee.

VII. ACADEMIC STANDING

Rules in the Graduate School Handbook apply with respect to good standing, probation, dismissal, reinstatement, reasonable progress, and denial of further registration.

A. Required committee meetings.

With regard to reasonable progress, a course program is developed and approved by the Advisory Committee within the first semester of the student's program. The program identifies likely dates for Preliminary, General and Final Oral Exams. The student and advisor are expected to have regular conferences to determine goals for Thesis/Dissertation research progress. A student who meets or demonstrates good faith in reaching established goals in coursework and research is considered to be making reasonable progress.

B. Internships.

Any internships must be arranged with advisor approval and be accompanied by a written agreement that lists the impact of the internship on time to graduation, course credits, stipend if any, proprietary information, or publication rights.

VIII. REQUIRED SAFETY TRAINING

All students, staff and faculty are required to complete safety training their first semester at OSU. The course is offered online at http://www.ehs.ohio-state.edu/index.asp?PAGE=ehs.training then click on **Lab Standard Training**. You are also required to complete **OSU BEAP** **(Building Emergency Action Plans).** You will need to send EHS an email to get an account in order to log in, and once completed you need to give the Graduate Studies Assistant, and your lab safety manager, a copy of the certificates once you have passed.

IX. REQUIRED HUMAN SUBJECTS APPROVAL

If you want to test humans at OSU, you MUST first pass an on-line course and obtain approval from the Office of Responsible Research Practices (http://www.orrp.ohio-state.edu/). This includes surveys, taste tests and the like. There are 3 levels of review a study involving humans can undergo: full-board, expedited, and exempted. Only a few categories of research qualify as exempted research. Fortunately for those of you who wish to conduct surveys or do sensory evaluation, most, if not all, of the research you are likely to want to do falls into one of these categories. Specifically, much of this work falls into category #6, which is defined as:

Taste and food quality evaluation and consumer acceptance studies,
a. if wholesome foods without additives are consumed, or
b. if a food is consumed that contains a food ingredient or at below the level and for a use found to be safe, or agricultural chemical or environmental contaminant at or below the level found to be safe, by the Food and Drug Administration or approved by the Environmental Protection Agency or the Food Safety and Inspection Service of the U.S. Department of Agriculture.

HOWEVER, just because your proposed research falls into the "exempted" category, this does not mean that you do not need to obtain approval. YOU cannot decide your proposal is exempt, you can only suggest that it should be. It is up to the ORRP to determine if it actually is. Their policy is summarized in the following quote, taken from their website:

"All research activities involving the use of human beings as research subjects must be reviewed and approved by an Ohio State University Institutional Review Board (IRB), unless the Office of Research Risks Protection (ORRP) determines that the research falls into one or more of the categories of exemption established by federal regulation.

Exempt research is generally short term in nature. It usually is performed "as written," i.e. the investigators do not plan to make changes in the research design, the selection of subjects, the informed consent process, or the instrumentation during the course of the study.

A determination that research is exempt does not absolve the investigators from ensuring that the welfare of human subjects participating in research activities is protected, and that methods used and information provided to gain subject consent are appropriate to the activity. Investigators may not solicit subject participation or begin data collection until they have received approval

from the appropriate Institutional Review Board OR written concurrence that research has been determined to be exempt."

If you are going to conduct research on humans, you MUST take and pass a web-based course. This includes the graduate student performing the test. This course can be accessed from: http://orrp.osu.edu/irb/training/citi.cfm. The actual course is located at www.citiprogram.org. You have to create a username and password to enter the site and your employee number (found on your pay stub; put eight zeros (00000000) for employee ID# if you do not have one) is required to sign up. For most people in this department who conduct taste tests and surveys, it will be sufficient to complete the basic course for social and behavioral researchers (group 2). More advanced nutrition studies may require completion of the biomedical course (group 1). A refresher course is required every 3 years. The entire course takes 2-3 hours but is broken down into modules and you can enter and exit the site as often as you like if you don't want to do it all at once.

To apply for Exempted Approval, you will need to download the "Exempt Application" form at: http://orrp.osu.edu/irb/exempt/index.cfm. Specific questions regarding exempt applications should be directed to Cheri Pettey (Phone: 614-688-0389 / E-mail: pettey.6@osu.edu). Allow three weeks for processing of this application.

For research that is not exempt, you will need to download the "Behavioral and Social Science Research" form at: http://orrp.osu.edu/irb/initialreview/index.cfm. Specific questions regarding this form should be directed to Greg Ellen (Phone: 292-6950 / Fax: 688-0366 / E-mail: ellen.2@osu.edu).

X. MASTER'S DEGREE PROGRAMS

Rules governing the Department's Master's Degree Programs are outlined in the Graduate School Handbook. The Department does not have a foreign language requirement. Specific conditions are stated below:

A. Program of Study

Once the student and his/her advisor agree on a list of courses, the student will meet with his/her Advisory Committee to discuss and approve the course outline. The advisory committee consists of 3 members of the graduate faculty. At least one of these committee members must be a full (not adjunct or courtesy) member of the Food Science and Technology department. This meeting must occur before the end of the first semester. Students from non-traditional backgrounds can propose alternative course plans that vary from A through E below, and is subject to approval by the Graduate Studies Committee. There are two options for the M.S. degree: M.S. Thesis and M.S. Non-thesis. Most students, and all students receiving a stipend or fellowship, pursue the M.S. Thesis degree. Part-time students may choose to pursue an M.S. Non-thesis degree, which is a terminal degree and cannot be followed up with a Ph.D. degree.

Students graduating with all of their classes taken on the quarter system:

M.S. Thesis

Students in the M.S. thesis program must take a minimum of 15 course credit hours in the Food Science and Technology Department, a minimum of 30 course credit hours at The Ohio State University, and a minimum of 45 total credits (including FST 998 research). Courses must be 600 level or above in FST, or 500 and above outside the department, to receive credit. FST 799, 993, 998 and 999 do not count toward the course credits.

A minimum competency in M.S. thesis graduates is achieved by a passing grade (B or higher) in at least one course from each of the following 5 categories, or is demonstrated by equivalent knowledge from other sources. Equivalent knowledge may include a similar course completed elsewhere, demonstrated proficiency, or real world experiences. A short statement on equivalence is written by the student with advisor support and given to the Graduate Studies Committee for approval.

In order to maintain a minimum competency level of the M.S. thesis degree graduates, students take at least one course from each of the following 5 categories, or have obtained the equivalent knowledge from other sources. All courses with no prefix are in the Food Science and Technology department. Courses below the 500 level do not receive graduate credit.

A. Chemistry: 601, 605
B. Engineering and Processing: 610, 611, 613, 630, FABE481, or ANSCI555.02
C. Microbiology: 636.01 and 636.02 (both must be taken)
D. Nutrition and Biochemistry: HUNTR310, HUNTR610, BIOCHEM511, 761, or 762
E. Integrated: 621, 650, or 696

Each student must take FST 850.01 Seminar, once each in the Winter and Spring Quarters. Students will be presenting their research data during these seminars, so it is recommended that they take them during their second year. It is highly recommended that the student take a statistics course.

M.S. Non-thesis

Students in the M.S. Non-thesis program must take a minimum of 20 course credit hours in the Food Science and Technology department, a minimum of 40 course credit hours at The Ohio State University, and a minimum of 50 total credit hours. Included in the 50 total credit hours are 5-10 credit hours of independent study, FST 993. Courses must be 600 level or above in FST, or 500 and above outside the department, to receive credit. FST 799, 993, 998 and 999 do not count toward the course credits. M.S. Non-thesis students may not receive a graduate stipend or fellowship.

A minimum competency is achieved by a passing grade (B or higher) in at least one course from each of the following 5 categories, or is demonstrated by equivalent knowledge from other sources. Equivalent knowledge may include a similar course completed elsewhere, demonstrated proficiency, or real world experiences. A short statement on equivalence is written by the

student with advisor support and given to the Graduate Studies Committee for approval. All course numbers with no prefix are in the Food Science and Technology Department.

A. Chemistry: 601 or 605
B. Engineering and Processing: 610, 611, 613, 630, FABE481, or ANSCI555.02
C. Microbiology: 636
D. Nutrition and Biochemistry: HUNTR310, HUNTR610, BIOCHEM511, 761, or 762
E. Integrated: 621, 650, or 696

Each student must take FST 850.01, Seminar, once each in the Winter and Spring Quarters. Students will be presenting their research data during these seminars, so it is recommended that they take them during their second year. It is highly recommended that students enroll in a statistics course.

Once the student and his/her advisor have agreed upon a list of courses, the student will meet with his/her Advisory committee to discuss and approve the course outline. This meeting must occur before the end of the first semester. Students from non-traditional backgrounds can propose alternative course plans that vary from A through E above. This is subject to approval by the Graduate Studies Committee.

Students graduating with all of their classes taken on the semester system:

M.S. Thesis

Students in the M.S. thesis program must take a minimum of 12 semester course credit hours in the Food Science and Technology Department, a minimum of 20 semester course credit hours at The Ohio State University, and a minimum of 30 total semester credits (including FST 8998 research). Any credits taken under the quarter system are multiplied by 2/3 to calculate the number of credits under the semester system. Courses must be 5000 level or above to receive credit. FST 8193, 8998 and 8999 do not count toward the course credits. English as a second language courses do count toward the course credits (any courses in EDUTL).

A minimum competency in M.S. thesis graduates is achieved by a passing grade (B or higher) in at least one course from each of the following 5 categories, or is demonstrated by equivalent knowledge from other sources. Equivalent knowledge may include a similar course completed elsewhere, demonstrated proficiency, or real world experiences. A short statement on equivalence is written by the student with advisor support and given to the Graduate Studies Committee for approval. All courses with no prefix are in the Food Science and Technology department. Courses below the 4000 level do not receive graduate credit.

A. Chemistry: 5600, 5610
B. Engineering and Processing: 5400, 5410, 5420, 5430, FABENG 3481, or MEATSCI 4510
C. Microbiology: 5536
D. Nutrition and Biochemistry: HUNTR 2310, HUNTR 4609, BIOCHEM 4511
E. Integrated: 5710, 5720, 5730

Each student must take FST 8991 Seminar, once in the Autumn and once in the Spring Semester. Students should take the autumn seminar their first autumn, and the spring seminar their second spring. Students will be presenting their research data during the spring seminar. It is highly recommended that the student take a statistics course.

M.S. Non-thesis

Students in the M.S. Non-thesis program must take a minimum of 14 semester course credit hours in the Food Science and Technology department, a minimum of 26 semester course credit hours at The Ohio State University, and a minimum of 30 total credit hours. Included in the 30 total credit hours are 4 credit hours of independent study, FST 8193. Courses must be 5000 level or above to receive credit. English as a second language courses do count toward the course credits (any courses in EDUTL). FST 8193, 8998 and 8999 do not count toward the course credits. M.S. Non-thesis students may not receive a graduate stipend or fellowship.

A minimum competency is achieved by a passing grade (B or higher) in at least one course from each of the following 5 categories, or is demonstrated by equivalent knowledge from other sources. Equivalent knowledge may include a similar course completed elsewhere, demonstrated proficiency, or real world experiences. A short statement on equivalence is written by the student with advisor support and given to the Graduate Studies Committee for approval. All course numbers with no prefix are in the Food Science and Technology Department. Courses below the 4000 level do not receive graduate credit.

A. Chemistry: 5600, 5610
B. Engineering and Processing: 5400, 5410, 5420, 5430, FABENG 3481, or MEATSCI 4510
C. Microbiology: 5536
D. Nutrition and Biochemistry: HUNTR 2310, HUNTR 4600, BIOCHEM 4511
E. Integrated: 5710, 5720, 5730

Each student must take FST 8991 Seminar, once in the Autumn and once in the Spring Semester. Students should take the autumn seminar their first autumn, and the spring seminar their second spring. Students will be presenting their research data during the spring seminar. It is highly recommended that the student take a statistics course.

Once the student and his/her advisor have agreed upon a list of courses, the student will meet with his/her Advisory committee to discuss and approve the course outline. This meeting must take place during the first semester of enrollment. Students from non-traditional backgrounds can propose alternative course plans that vary from A through E above. This is subject to approval by the Graduate Studies Committee.

B. Plans, Requirements, Time Limit.

As indicated above, the Department offers the M.S. Thesis and M.S. Non-thesis, for which a minimum of 30 semester credit hours are required. Normally, students following M.S. Thesis can expect to take 40-60 credit hours of research in addition to the required hours of course work.

There are no teaching and internship requirements for this Department's graduate students. However, to the extent possible, students who have GRA appointments are expected to assist with teaching for at least one semester per year.

Graduate students who wish to transfer to this Department from other institutions must complete 80% of their credits at The Ohio State University. All students must register for at least 3 credit hours during the semester of graduation.

If credits are being transferred from another university to count toward a graduate degree, they should be transferred at the time the student is admitted but no later than the end of the second semester of enrollment in the Graduate School.

The overall time limit for acquiring a M.S. Degree in Food Science and Technology is five (5) years.

C. Master's Degree on the Basis of General Examination.

The M.S. degree may be awarded to a doctorate student on the basis of a satisfactory General Examination as stated in the Graduate School Handbook.

D. Master's Examination and Thesis.

The Examination Committee for the M.S. degree in Food Science and Technology consists of at least three faculty members, including the candidate's advisor. Normally the student's Advisory Committee constitutes the Examination Committee. Changes in the Examination Committee may be made upon request from the student, advisor, or members of the Graduate Studies Committee and with the approval of the Graduate Studies Committee.

Graduate students must obtain their advisor's signature on classes taken, as outlined in their course plan, and submit the signature to the Graduate Program Assistant indicating that the required classes have been taken. This must happen before the defense is scheduled.

The student must submit a copy of their thesis to their committee, either electronically or printed, a minimum of 7 days before their defense.

M.S.-Thesis

The M.S. thesis examination begins with a research presentation. The presentation should be announced at least 7 days in advance and will be open to the public. The presentation lasts a maximum of 45 minutes and includes a 20-35 minute presentation followed by a maximum of 10 minutes of questions. The exam continues with a closed door examination by the student's committee, of 60-90 minutes. The start of the presentation to the end of the examination is two hours. The committee is required to attend the entire exam, including the presentation. The closed door portion of the exam includes a defense of the thesis and general subject matter

examination. The subject matter portion covers principles of food science and/or nutrition, which should be familiar to the candidate from course work.

M.S. Non-Thesis

The M.S. non-thesis examination consists of a four-hour written section and an examination, including a public presentation. The written portion is designed to test the student's knowledge of food science and other subject matter when a substantial portion of the student's program has consisted of outside courses. The questions are submitted by faculty members to the student's advisor, who prepares the examination and administers the examination. The student's answers are evaluated individually by the faculty members who have submitted the questions and overall by the Examination Committee.

The M.S. non-thesis examination begins with a presentation. The presentation can be on the research project or a literature review, and should be announced at least 7 days in advance and will be open to the public. The presentation lasts a maximum of 45 minutes and includes a 20-35 minute presentation followed by a maximum of 10 minutes of questions. The exam continues with a closed door examination by the student's committee of no less than 1 hour. The start of the presentation to the end of the examination is two hours. The committee is required to attend the entire exam, including the presentation. The closed door portion of the exam includes a defense of the student's individual study project review. A brief, typewritten synopsis of the project, with premise, objectives, procedures and results, must be submitted to the members of the Examination Committee one-week prior to the scheduled examination date. The remainder of the oral examination is devoted to subject matter for clarification and supplementation of answers to the written questions.

Other rules of the Department with respect to the M.S. examination and the thesis, including judgment and decisions on the student's performance, are covered in the Graduate School Handbook .

XI. DOCTORAL DEGREE PROGRAMS

The rules outlined in the Graduate School Handbook apply specifically to the Department's Doctorate Degree programs. Selected rules and conditions are highlighted as follows:

A. Program of Study

The Department offers programs leading to the Doctoral Degree. Students entering the Ph.D. program are expected to hold an M.S. Degree; however, direct admission to the Ph.D., and transfer from the M.S. program without completing the M.S. may occur with permission of the Graduate Studies Committee. The petition from the advisor must include the advisor's recommendation and proof of research experience. The current GPA of the student must be over 3.5. The student must have been enrolled at OSU for less than a year. Students entering the Ph.D. program without an M.S. degree are expected to complete the course and total credit requirements for both an M.S. and Ph.D. in FST at OSU.

The student will select a program of courses early in his/her career in consultation with his/her advisor. This course plan must be approved by the student's Advisory Committee and submitted to the Graduate Studies Coordinator ***before the end of the first semester of enrollment***. The course plan should identify probable dates for proposal, candidacy, and final oral examinations. The advisory committee consists of 4 members of the graduate faculty. At least one of these committee members must be a full (not adjunct or courtesy) member of the Food Science and Technology department.

Students entering the Ph.D. program with an M.S. from another university can request that 30 credit hours from their M.S. program be counted toward the 80 semester hours needed for the Ph.D. This request should be made during the first semester of attendance at OSU but must be made before the end of the second semester.

The Department does not have language or internship requirements for graduate students. However, Ph.D. students must participate in the laboratory instruction program at least twice before graduation; see the section on teaching. Students are allowed to pursue internship opportunities with preapproval; see the section on internships.

Students graduating with all of their classes on the quarter system:

Doctoral Degree Course Requirements

Ph.D. students are required to take at least 30 course credits at OSU beyond their M.S. degree, and at least 15 of these must be in FST at OSU. 999, 998 and 799 do not count toward any of these course credits. Students must meet the same minimum course requirements as an M.S. student. See the M.S. course requirements for the 5 categories of classes. In addition, Ph.D. students are required to take at least three courses from 700 and 800 level courses. Two of these must be in the FST department. Note that the 700 and 800 level courses do not fulfill the minimum course requirements for the M.S. degree. Seminars, FST 799 and FST 850 do not count toward the required 700 and 800 level courses. Each student must also take FST 850 three times (winter once and spring twice). Students will be presenting their research data during FST 850, so it is recommended that they take them during their second year. Courses taken during the M.S. degree can be used to count toward the requirements for 700 and 800 level courses and for two of the FST 850 courses (at least one spring session must be taken). If courses are taken for a graduate minor, these courses cannot be used to count toward the required course credits for their degree in Food Science.

Students graduating with all of their course on the semester system:

Doctoral Degree Course Requirements

Ph.D. students are required to take at least 20 semester course credits at OSU beyond their M.S. degree, and at least 12 of these must be in FST at OSU. Any credits taken under the quarter system are multiplied by 2/3 to calculate the number of credits under the semester system. FST 8193, 8998 and 8999 do not count toward any of these course credits. English as a second

language courses do count toward the course credits (any courses in EDUTL). They must take at least 80 total semester credits at OSU, which includes 8999 credits, or 50 total credits if they have transferred credit for their M.S. Students must meet the same minimum course requirements as an M.S. student. See the M.S. course requirements for the 5 categories of classes. In addition, Ph.D. students are required to achieve a passing grade (B or higher) in at least 6 credits from 6000 and 7000 level courses. At least 4 of these credits must be in the FST department. Note that the 7000 level courses do not fulfill the minimum course requirements for the M.S. degree. Seminars do not count toward the required 6000 and 7000 level courses. Each student must take FST 8991 Seminar once in the Spring Semester and once in the Autumn Semester. Students should take the autumn seminar their first autumn, and the spring seminar their second or later spring. Students will be presenting their research data during the spring seminar. Courses taken during the M.S. degree can be used to count toward the requirements for 6000 and 7000 level courses but not toward the seminar courses.

B. Required Teaching Experience

All students graduating with a Ph.D. are expected to have teaching experience, and be prepared for a possible teaching career. Students are required to have participated in the departmental laboratory instruction program at least twice before graduation. Students on assistantships or other departmental funding are required to participate in the laboratory instruction program annually, and those experiences count toward the minimum two that are required. Students not receiving any funding, and graduating in 2013 or earlier are exempt from this requirement, but are strongly encouraged to participate if they plan on a teaching career.

C. Proposal Defense

The student must prepare and defend a research proposal which will be defended before the student's Advisory Committee. The proposal must be received by the committee a minimum of one week before the exam. The form that must be signed and turned into the Graduate program assistant is at the end of this handbook. The proposal defense must be completed prior to scheduling the Candidacy Examination. The proposal is over proposed future research and cannot include completed research, except as preliminary results.

D. Candidacy Examination

Students entering the Ph.D. program should complete the Candidacy Examination once they have completed all of their classes. The proposal defense must be completed before the candidacy exam is scheduled. The candidacy exam cannot be attempted in less than a year and a half from entry into the graduate program, unless a petition to the graduate studies committee is approved.

The objective of the Candidacy Examination is to test the student's knowledge in his/her field of study and the ability to integrate and apply this knowledge. Students are encouraged to form study groups to prepare for the examination.

The Candidacy Examination consists of a written and oral portion. The written exam will be administered by the Advisory committee. Every Advisory Committee member will submit questions and grade them. The exam can be closed book (6-8 hrs) or open book (up to 3 days). The student's answers will be photocopied and distributed to the Candidacy Committee for evaluation. In accordance with Graduate School rules, the student will be given one copy of the examination and will type the answers for the Graduate School Representative. Chemical, mathematical equations and diagrams may be handwritten. The student's advisor will insure versions of the written exam are consistent with the original handwritten version.

If, based on evaluating the written portion, the Advisory Committee members see no possibility for a satisfactory overall performance on the Candidacy Examination, the student may waive the right to take the oral portion. The Advisory Committee may not, however, deny a student the opportunity to take the oral portion. If the student decides to waive the right to take the oral portion, a written statement requesting the waiver (II.6.9.7.3) must be presented to the Advisory Committee. In such a case, the Advisory Committee records an "Unsatisfactory" on the Candidacy Examination Report form and returns it to the Graduate School along with a copy of the student's waiver request.

The oral portion of the exam will be administered by the Candidacy committee (Advisory committee plus the graduate school representative) and will typically last 2 hrs. The oral exam will be related to the questions in the written exam but not limited to them. The student should NOT prepare any type of presentation for the exam. The oral portion of the examination must be completed within one month after completion of the written portion of the examination.

The candidacy exam tests for a basic understanding of food science and the ability to critically analyze complex problems related to food. Therefore, the student should have a thorough understand of food chemistry, microbiology and engineering. At a minimum, the student should have successfully completed core food science courses and should be able to effectively address candidacy exam questions relevant to these courses. The candidacy exam also tests the student's understanding of a particular specialization within the food science discipline. Familiarity with theories, research methods, and data analysis and interpretation, within the student's specialization, is essential for passing the candidacy exam.

Graduate students must obtain their advisor’s signature on classes taken, as outlined in their course plan, and submit the signature to the Graduate Program Assistant indicating that the required classes have been taken. This must happen before the candidacy exam is scheduled.

E. Candidacy

The Department's requirements for candidacy for the Ph.D. degree are listed in the Graduate School Handbook , in addition to rules regarding time limits and readmission for candidacy.

F. Dissertation

The student's advisor and Dissertation Advisory committee must approve the subject of the dissertation research.

Other Departmental rules governing the dissertation, including committee selection, draft approval, format, approval and submission of the final copy are outlined in the Graduate School Handbook (III).

G. Final Oral Examination

The student must submit a copy of their dissertation to their committee, either electronically or printed, a minimum of 3 weeks before their defense. In addition, the dissertation must be given to the committee a minimum of 1 week before the committee is asked to sign the Doctoral Draft Approval/ Notification of Final Oral Examination form.

The final oral examination begins with a research presentation. The research presentation should be announced at least 7 days in advance and will be open to the public. The presentation lasts a maximum of 45 minutes and includes a 20-35 minute presentation followed by a maximum of 10 minutes of questions. The exam continues with a closed door examination by the student's committee, of 60-90 minutes. The start of the presentation to the end of the examination is two hours. The committee, including the graduate school representative, is required to attend the entire exam, which includes the presentation. The closed door portion of the exam tests the student for originality, independence of thought, and ability to synthesize and interpret information. This examination is based on, but not limited to, the student's dissertation.

Other rules pertaining to the Final Oral Examination, including selection of the Examination Committee, action by the Graduate School Representative, postponement and the decision with respect to the student's performance and repeat of the examination are stated in the Graduate School Handbook .

XII. GRADUATE ASSOCIATES

A. Graduate Associate (GA) Responsibilities

Graduate Associates in the Department have both teaching and research responsibilities. The GA assists in teaching by helping with preparation for courses, grading and conducting of laboratory experiments. The level of responsibility given to the GA depends on his/her level of experience.

The GA assists in research by performing work as assigned by the faculty member in charge of the project, and who usually also serves as the student's advisor. The commitment is 20 hours per week, 52 weeks a year, excluding federal holidays. The research performed may or may not be part of the student's thesis.

In addition to the GA's research and teaching responsibilities, they are expected to take classes

toward their degree. See the section on course requirements.

Performance evaluations of GA's are made by the major advisor and reported to the Department Chair. The evaluations are used in determining annual stipend increases.

B. Eligibility Requirements

A student must be registered for 18 credit hours in order to be eligible to be a GTA or GRA. Students are only paid as a GRA or GTA if they are registered for 18 credit hours.

Normally, to be eligible for a GA appointment, a student must pursue a graduate degree in a Departmental program. Students pursuing a graduate degree in other OSU departmental programs may be considered when positions cannot be filled from within the Department due to a lack of students or a specific expertise among the students.

If a student's GPA falls below 3.0, any department assistantship will end immediately, including the tuition payment.

Graduate students admitted conditionally are not eligible for GA appointments until they achieve or are nearly achieving Regular status.

Other rules of GA appointment eligibility are listed in the Graduate School Handbook .

C. Terms of Appointment

The majority of GA appointments are for three semesters. Appointments for less than a year or less than 50% are not allowed except by petition to the Graduate Studies Committee. Offers of appointment and reappointment are made in writing at the beginning of every autumn semester, or as early as possible prior to the start of the appointment. The offer shall include a statement of the general responsibilities associated with the appointment.

D. Stipends

Stipends for new and renewal of GA's in the Department are determined according to the University's annually established levels.

Instruction and general fees and non-resident fees, when applicable, are authorized by the department or University for all GA's on at least a 50% appointment, for the duration of the appointment.

E. Other Forms of Financial Support, Including Outside Jobs.

All graduate students on a 0.50 FTE or higher paid appointment (GRA, GTA, or Fellowship) may not have any other employment. Exceptions are by advisor petition to the Graduate Studies

Committee. Exceptions for Fellows also require Graduate School approval.

Fellowships for qualified applicants are available from the Ohio Agricultural Research & Development Center and the OSU Graduate School. Occasionally, the Department has a need for graduate students to perform part-time service anywhere from one week to a few months time. Students who are not appointed as GAs are offered the opportunity to fill this need at an hourly pay-rate equivalent to the minimum GA stipend, however they do not provide fee authorizations.

F. Criteria for Reappointment or Termination of GA

The Department's criteria for reappointment or termination of GAs are listed in the Graduate School Handbook .

G. Grievance Procedures

Grievance procedures are handled as stated in the Graduate School Handbook .

H. Benefits

Benefits for GA's in the Department are listed in the Graduate School Handbook .

Specifically, with respect to Time Off , GA's who have been assigned to assist with laboratory classes are expected to report to the Instructor in charge one week before the beginning of the semester.

GA's who are appointed to research assignments are expected to work during the semester breaks. Such GA's are entitled to 10 working days of Time Off following one full year of service. Time Off cannot be accrued.

XIII. Desk Assignments

The Graduate Studies Committee assigns students to desks in the common areas of 266 Parker and 48 Howlett. The desks in 220, 230, 240, 320, 330, 340 Parker and 59, 64, 144A Howlett will be assigned by priority to the professors proximate to the lab. However, if any of the desks, including half circle desks, in any given semester are not assigned to a full time graduate student pursuing a degree in this department, these desks can be assigned to another full time graduate student pursuing a degree in this department. The relevant professor will be notified before the assignment is made so that they have the option of first rearranging their other students. Once that student is assigned, they should not be asked to move until they graduate, unless the student requests another desk.

XIV. OUTSTANDING TEACHING ASSISTANT AWARD

Objectives:

To motivate and encourage graduate students to contribute to our excellent teaching program for our students.

To provide graduate students the teaching opportunity experience and the advantages of award recognition for obtaining academic faculty positions after their graduate study.

Selection Criteria:

The students assisting with laboratory instruction should be nominated and evaluated by students for the award. There will be two categories of recognition: the Departmental Teaching Award with an individual plaque, name on the Departmental Award Display Plaque, and cash award of $500 and the Teaching Award of Merit. The Departmental Teaching Award will be given to student(s) with 80% of the students rating them in the top 25% and 70% of the students voting "yes" to the candidate who deserves the award. The Teaching Award of Merit will be given to all students with 70% of the students rating them in the top 25%, and 60% of the students voting "yes" to the candidate who deserves the award.

Evaluation Sheet:

(1) Ranks among TAs at the University:
Top 5%, Top 25% Top 50% Below 50%

(2) Should the nominee receive award? Yes ? No

A student can receive a maximum of two teaching awards during their entire graduate study.

Nominations should be submitted to the Chair, Graduate Student Teaching Award Committee. The Chair should solicit nominations by posted memo and e-mail by the second and seventh week of the semester.

The Department Chair and Chair of the Graduate Student Teaching Award Committee will present the award to the winner in his/her classroom the end of the semester.

Evaluation:

The student evaluation will be administrated and tabulated by a staff member. The staff member should keep records for the next one-semester. Copies of the evaluation results will be sent to the students to assist them in maintaining their strengths and improve their weaknesses.

XV. OUTSTANDING RESEARCH AWARD

Objective:

To motivate and encourage graduate students to publish high quality research in a timely manner.

Selection Criteria:

M.S. candidate:

2 1/2 years after starting M.S. program--2 accepted publications:

Ph.D. candidate with M.S. degree:

4 years after starting Ph.D. program—4 accepted publications.

Ph.D. candidate without M.S. degree:

5 years after starting Ph.D. program—4 accepted publications.

Journal and Paper criteria:

Original papers or reviews in peer-review journals or book chapters in food science and related publications. The Research Award Committee will decide the appropriateness of the work if this is unclear.

Awards:

1 Individual Plaque and $500 Cash Award

2. Departmental Award Display Plaque

Award selection:

Any student who meets the selection criteria will receive the award

Implementation:

Effective immediately

Graduate Student Research Award Application Form

Department of Food Science and Technology

Date:

Student Name:

Advisor: Advisor signature:

Thesis or Dissertation Title:

Starting Date for Graduate Program (Transcript Record)

M.S.:

Ph.D:

Attach a copy of the published paper, galley proofs or an acceptance notification.

Selection Criteria: (Publications from M.S. work do not count toward Ph.D criteria)

M.S. candidate:

2 1/2 years after starting M.S. program--2 accepted publications:

Ph.D. candidate with M.S. degree:

4 years after starting Ph.D. program—4 accepted publications.

Ph.D. candidate without M.S. degree:

5 years after starting Ph.D. program—4 accepted publications.

Submitted to Chair, Research Award Committee

GRADUATE STUDENT APPROVAL OF THE RESEARCH PROPOSAL FORM

According to the Graduate Program Handbook, all Ph.D. candidates are required to prepare and defend, within 2 years of starting their Ph.D. program, a research proposal before their Advisory Committee. This must be done prior to the Candidacy Examination.

This form certifies that (Ph.D. candidate's name)_____

has completed the Proposal Defense on _____(*date)*

***Advisory Committee*:**

_____

Signature - ADVISER **date**

_____

Signature **date**

_____

Signature **date**

_____

Signature **date**

Please give a copy of this form to your adviser and to the Graduate Program Assistant.

Evaluation of Public Seminar, Thesis or Dissertation, and Defense

Circle One:

Name of Student: _____ M.S. Ph.D.

Please rate each attribute on the following scale:
5 rating = exceptionally competent
4 rating = highly competent
3 rating = competent
2 rating = somewhat deficient
1 rating = strongly deficient
N/A = unable to determine

(Please evaluate all of the criteria.)

Attribute	**Rating**
Understanding of basic principles of chemistry:	
Understanding of basic principles of microbiology:	
Understanding of basic principles of process engineering:	
Analysis and application of information in chemistry, microbiology and process engineering:	
In depth review of the literature related to the research problem:	
Literature is appropriately related to the research findings:	
Quality of the research results:	
Defense of the research results:	
Quality of the oral presentation:	
Quality of the written thesis or dissertation:	
Overall assessment:	

Comments:

At the conclusion of the defense, **each committee member should fill out this response sheet**. **Comments** can be provided at the bottom for explanations of the reasoning behind the overall evaluation of the examinee's performance if desired. This document must be completed regardless of the outcome of the defense.
Completed forms are to be **turned in to Karen Moore**, not the student.

Graduation Checklist: This is a typical graduation plan. See the 2 Graduate Handbooks for complete details: http://grad.fst.ohio-state.edu/gradhand.PDF and http://www.gradsch.ohio-state.edu/Depo/PDF/Handbook/Handbook.pdf

□ Form and meet with advisory committee to approve course plan and discuss research before the end of the first semester. Submit copy of signed course plan to Karen Moore.

□ Meet with advisory committee occasionally to discuss research progress.

□ Maintain a GPA higher than 3.0.

□ Register for 16 credits every semester, and 8 in the summer, if on a GRA, fellowship or other stipend.

□ Enroll in seminar (FST 8851) two times, once each in Autumn and Spring.

□ For Ph.D., pass your Proposal Defense before scheduling your candidacy exam. Give your proposal to the committee a week before the exam. The proposal cannot include finished work, except for preliminary data. The earlier you do this, the smoother your research progress will be. Submit signed Proposal Defense form to Karen Moore.

□ For Ph.D., complete candidacy exam.
- Form your examination committee, which is usually, but not always the same as your advisory committee.
- Normally all of your classes in your course plan should be completed.
- Take the written examination, coordinated by your advisor, a month before the oral exam.
- Submit date for the oral portion of the candidacy exam to the graduate school at least two weeks before the exam, using this form: http://www.gradsch.osu.edu/Depo/PDF/Doc_Notify.pdf. The oral exam must take place within a month of the written exam.
- After passing the exam, submit signed Candidacy Examination Report form to the graduate school with a copy to Karen Moore.

□ Complete a minimum of 30 total and 20 course credits for an M.S., 80 total and 20 course credits for a Ph.D.

□ Submit research results for publication.

□ Submit Application to Graduate form, signed by Dr. Barringer, to the Graduate school by the second Friday of class at the beginning of the semester you intend to graduate, with a copy to Karen Moore. DO NOT mail this form unless you allow a week for delivery. If you are unable to graduate that semester, notify the Graduate school as soon as possible. The forms can be found at: http://gradsch.osu.edu/Depo/PDF/DoctoralGraduate.pdf or http://gradsch.osu.edu/Depo/PDF/Master%27sGraduate.pdf

□ Submit thesis or dissertation to your research committee at least 2 weeks (M.S.) or 3 weeks (Ph.D.) before the date of the final oral exam. For Ph.D., this gives the committee one week to read it before they sign the Draft Approval form found at http://www.gradsch.osu.edu/Depo/PDF/Doc_Oral.pdf. Have the thesis or dissertation checked by the Graduate school for formatting. Complete rules for the thesis or dissertation are in the

Graduate School Handbook at http://www.gradsch.ohio-state.edu/Depo/PDF/Handbook/Handbook.pdf.

□ For Ph.D., submit dissertation and Draft Approval form, signed by your committee, to the graduate school at least two weeks before the final oral exam. Give Karen Moore a copy.

□ Pass final oral exam, and submit the Final Oral Examination or Master's Examination Report form to the graduate school with a copy to Karen Moore by the deadline (about a week and a half before the last day of class, depending on the semester.)

□ Submit final, bound thesis to your advisor. Submit Final or Thesis Approval form and fees to the graduate school by the deadline (near the last day of class, depending on the semester.)
. Submit thesis or dissertation electronically. Instructions at http://www.gradsch.ohio-state.edu/Content.aspx?Content=27

□ GRA ends the last day of December, April or August. Get approval before accepting work before that date. If you will continue to work at OSU after graduation and you are not registered as a student, you must be appointed to an hourly or salaried appointment. International students: resolve I-20 & practical training issues.