

**Graduate Student Handbook**  
**Department of Food Science at Rutgers University**  
**Spring 2020**

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## **1. PHILOSOPHY OF THE FOOD SCIENCE GRADUATE PROGRAM**

The Graduate Program in Food Science is a research-oriented, basic science-driven program in the life and physical sciences applied to understanding food and food systems. Its purpose is to prepare students for professional careers in food science.

An underlying principle that governs the graduate program is that there must be one standard of excellence for all of our students, including full-time or part-time, thesis or non-thesis MS, and PhD students. The continuing challenge is to provide flexibility as to how individual students meet this standard rather than having different standards for different types of students.

We believe that for our students to become good food scientists they must be well versed in the primary disciplines of chemistry, biology, and engineering as they apply to food systems. This is accomplished through a core curriculum consisting of three courses:

- Food Chemistry Fundamentals (16:400:513)
- Food Biology Fundamentals (16:400:514)
- Food Engineering Fundamentals (16:400:507)

These three courses are supplemented with a variety of advanced courses on specific topics within the core areas. They prepare our students with the concepts and information necessary for the ultimate goal to provide an abundant supply of safe, wholesome, high quality, inexpensive food for the people of the world.

Research, which comprises a major and, in some cases, the most important portion of graduate education, adds considerably to a student's knowledge. A central characteristic of food science research is that it involves basic science studies with a practical orientation. A fundamental understanding of the chemical, physical, and biological, including nutritive and health-promoting properties of foods and related systems is thus essential.

Students completing graduate work in food science are expected to understand, analyze and interpret facts and principles. Equally important is the ability to communicate this knowledge with lucidity, both verbally and written, since knowledge must be communicated to the larger world to have real value.

## **2. GENERAL INFORMATION**

This Food Science Graduate Student Handbook supplements and expands upon the School of Graduate Studies Guide for Graduate Program Directors & Administrative Assistants. Each student is expected to become familiar with the policies published in this Food Science Graduate Student Handbook.

### **2.1 Advisors**

A graduate student should choose a major advisor, as soon as possible, no later than the end of the second semester. Failure to do so could significantly delay the completion of degree requirements. If an advisor is not chosen by the start of the second year of study, the Graduate Program Director may assign an interim faculty advisor.

## **2.2 Registration and Course Requirement**

Students should consult with their major advisors before registering for courses.

### **A. Full-time Student Status**

A student must register for at least 9 credits per semester to be considered full-time. There is no extra charge for credits beyond 12; however, students cannot register for more than 16 credits without special permission from the Dean of the School of Graduate Studies. Students may consult with their advisors to take up to 16 credits while in full-time status as this reduces tuition payments in the later phases of the study.

### **B. Required Core Courses**

All students must take Food Chemistry Fundamentals (16:400:513), Food Biology Fundamentals (16:400:514), and Food Engineering Fundamentals (16:400:507) during their first two years. Students who have taken courses in food engineering or who feel they have sufficient background in engineering may petition the instructor for an exemption to this course. It is the student's responsibility to initiate this process. An exemption means you do not need to take the course, but you do need to take other food science or related graduate course(s) to replace the four credits.

### **C. Undergraduate Courses for Graduate Credits**

Graduate students can enroll up to 12 credits of undergraduate courses and use them toward their graduate degrees, providing those are 300 or 400 level courses and are relevant to their areas of study. Students should discuss the relevance of those courses with their advisors prior to registering. All upper-level undergraduate courses must be pre-approved by the Graduate Program Director. Such courses must be preceded with a "G" prefix during registration to obtain graduate credit.

### **D. Graduate Assistantship**

All students supported by a graduate assistantship (GA) must register for 6 "E" credits of Graduate Assistantship (16:400:866). Since students with GA are required to work in the laboratory, they cannot take as many credits as students who are self-supported. "E" credits block out the time required for the specific activity and thereby decrease the number of course or research credits a student can take. For example, a student registering for 6 E credits will be permitted to take a maximum of 10 course and research credits. (Similarly, a student registered for 3 E credits of "English as a Second Language" will be permitted only 13 course and research credits). No tuition is charged for E credits. "E" credits do not count toward degree credits.

### **E. Teaching Assistantship**

All students supported by a Teaching Assistantship (TA) must register for 6 "E" credits of Teaching Assistantship (16:400:877) and follow the same registration procedure as outlined above for Graduate Assistants.

### **F. Graduate Fellowship**

Students supported by a fellowship administered through Rutgers University should register for zero credits of Graduate Fellowship (16:400:811); this registration merely serves as an indicator of the

fellowship. Students who hold fellowships not administered through Rutgers should not register for Fellowship credits.

### **G. Reduced Credit Load**

All international students must register for at least 9 credits per semester to comply with federal regulations. Advanced students may submit the Reduced Credit/Course Load Form to the Graduate Program Director for approval. Advanced students may be allowed to register for as few as 1 credit per semester. Reduced Credit Load forms are available from the School of Graduate Studies website.

### **H. Drop/Add**

If changes (drop/add) are necessary, they should be made in consultation with the advisor. Ideally, the entire graduate program study should be outlined by the student under the guidance of the major or interim advisor before the end of the student's first year of graduate study.

### **I. Continuous registration**

All students (full-time and part-time) are expected to maintain continuous registration up to the time of graduation. If a student fails to register for one or more semesters, the School of Graduate Studies considers them "dropped out", and the student must apply for readmission using the necessary forms available on the School of Graduate Studies website.

Students must be registered the semester they intend to graduate, with the following exceptions: A student must be registered in the Spring semester for October degree. A student must be registered in the Fall semester for a January degree. A student seeking a May degree must be registered in the Spring semester.

## **2.3 Individual Development Plans**

The Food Science Graduate Program requires that all new students entering the program in Fall 2019 or after to have and maintain an Individual Development Plan.

There are four separate surveys that must be completed each year: (1) progress made in the past year; (2) A two-part skills assessment, one completed by the student and one by the faculty mentor; and (3) goals for the next year and beyond.

The student will complete the first survey, the student version of the skills assessment, and the last survey online, and print digital or paper copies for review with the faculty mentor. The faculty mentor will complete the skills assessment of the student and will also print a digital or paper copy for review with the student. At the completion of the process, hard copies of all four documents should be printed and signed by both the student and the faculty mentor and given to the graduate secretary for inclusion in the students' folder.

Faculty wishing to use forms that are different than those developed by the Graduate Program can petition the Graduate Program Director.

### **3. SEMINAR IN FOOD SCIENCE**

#### **3.1 Overview**

The Seminar class is offered every fall and spring. Students register for Seminar to fulfill the requirements of M.S Seminar, Initial PhD Seminar, and Final PhD Seminar. Responsibility for coordinating Seminar rotates between Food Science department faculty.

Seminar is an integral component of the Food Science Graduate Program. Seminar meets weekly when classes are in session and provides students and faculty members with a forum to present current research and to discuss the latest developments in the field of food science. Seminar provides an important opportunity for members of the Food Science Graduate Program as a whole to interact and exchange ideas. The Graduate Program Faculty consider Seminar to be one of the most important learning experiences in a student's graduate education. As a scientist in academia, government or industry, our graduates will be judged not only on the quality of their research accomplishments but on how well they communicate them to others. We have a proud tradition of teaching our students how to present excellent seminars.

#### **A. Required Seminars for MS and PhD Students**

MS students are required to take 1 credit of MS Seminar. PhD students are required to 1 credit of Initial PhD Seminar and 1 credit of Final PhD Seminar.

#### **B. Attendance Expectation and Requirement**

All students and faculty are expected to attend seminar when they are on campus. All students who are enrolled in this seminar are expected to prepare their presentations carefully and all are required to attend each Seminar during the semesters that they are enrolled. Part time students located off campus may attend Seminar virtually using the appropriate software.

During the semester in which a student is registered for seminar, they should fulfill the attendance requirement of 14 seminars and give their own seminar presentation. Failure to attend each seminar may affect a student's final grade.

#### **C. Seminar Committee**

The Seminar Committee responsible for seminar each semester shall consist of a faculty coordinator and a second faculty member who will assume the position of coordinator in the following semester.

#### **D. Who Should Register for Seminar**

Students who wish to register for seminar should do so only after consulting with their advisor to discuss the progress of their research or critical essay. The advisor must notify the Seminar Coordinator that the student is prepared to present. Students who register for seminar are expected to present.

#### **E. Seminar Orientation & Lottery for Presentation Schedule**

At the beginning of each semester, the Faculty Coordinator will schedule a seminar orientation meeting. At this meeting, the seminar schedule will be set and the coordinator will explain specific guidelines

covering seminar style, format, abstract preparation, and attendance requirements. Students with a grade of "incomplete" from a previous semester must go first the next semester and should not register again.

Seminar slots are assigned by lottery. Students who must have a specific date due to extenuating circumstances, (job assignments, committee member availability, etc.) must put their request in writing and provide justification for special consideration. If there are any conflicts that are not resolvable, trades may be arranged before the end of the lottery session but no later than the second class meeting time for Seminar. The Final Seminar schedule will be posted on the department website.

#### F. Post-Seminar Evaluation

After each class, the Faculty Coordinator will facilitate a critique of each speaker to provide constructive feedback on the strengths and weaknesses of the seminar. The objective of this dialogue is to provide suggestions that will strengthen future presentations. The Faculty Coordinator determines the final grade (S/U) for each student taking Seminar. To avoid conflicts of interest, faculty members cannot provide grades for their own advisees. The grade is based on preparedness, presentation, clarity, and style as described in the guidelines found in Reference Materials on the department website, and not on scientific content or data.

## 4. MASTER OF SCIENCE (MS Degree)

### 4.1 Options of MS Degree

Student must choose one of the following 2 options: Plan A (MS with Thesis) and Plan B (MS without Thesis). The table below summarizes the requirements of the two options.

	Plan A	Plan B
Total Credits	30	30
Course Credits	11 Required Courses Credits: <ul style="list-style-type: none"> <li>▪ Food Chemistry Fundamentals 3 credits (16:400:513)</li> <li>▪ Food Biology Fundamentals 3 credits (16:400:514)</li> <li>▪ Food Engineering Fundamentals 4 credits (16:400:507)</li> <li>▪ Seminar, 1 credit (16:400:601 or 02, Section 01)</li> </ul> 10 elective course credits	11 Required Courses Credits: <ul style="list-style-type: none"> <li>▪ Food Chemistry Fundamentals 3 credits (16:400:513)</li> <li>▪ Food Biology Fundamentals 3 credits (16:400:514)</li> <li>▪ Food Engineering Fundamentals 4 credits (16:400:507)</li> <li>▪ Seminar, 1 credit (16:400:601 or 02, Section 01)</li> </ul> 19 elective course credits
Research Credits	9	None
Required document	Thesis	Critical Essay
Examination	Defense of Thesis	Defense of Critical Essay
Other information	May continue onto PhD program	Terminal degree

The Plan A option requires original laboratory research and the writing of a thesis describing the results and conclusions of this research. The Plan B option has no research or thesis requirement; instead the student must submit a critical essay on a topic relevant to food science. Ordinarily, students planning to continue for a PhD complete the Plan A degree option. Plan B degree recipients are not permitted to continue for the PhD degree, except under unusual circumstances.

The Plan A MS degree is a traditional research degree with the requirement of a thesis based on original research conducted under the direction of a research mentor (major advisor) and approved by a thesis committee. The program prepares the student for a technical career or for further study toward the PhD degree. The completion and defense of the thesis is usually the rate-limiting step in graduation and the most important single requirement for obtaining the degree. Therefore, it is important to select a research mentor and define a research project as soon as possible after joining the program. The research project may influence the selection of elective courses taken for the MS degree.

The Plan B MS degree is a non-research degree with the requirement of a critical essay based on a literature review conducted under the direction of an advisor. The program prepares the student for a technical career but not typically for further graduate study toward the PhD degree—thus the Plan B MS is considered as a terminal degree. The critical essay summarizes the current state of knowledge in a specific field. The completion and defense of the critical essay is usually the rate-limiting step in graduation and the most important single requirement for obtaining the degree. The student will develop with their advisor an appropriate topic for the critical essay. A term paper submitted for another course is unacceptable as a critical essay, and the submission of such will be considered as a violation of academic integrity.

Students should consult with their advisor before registering for courses. Courses taken in other programs at Rutgers University are acceptable as long as they are related to the student's studies in Food Science and have the approval of the Graduate Program Director.

Rutgers University also offers a Master of Business and Science (MBS) Degree which is part of the University Professional Science Master's program. This program brings together master's level study in science with courses in business and policy. The Food Science MBS Program has different course requirements, a different application process and is administered separately from the Graduate Program in Food Science. Students can transfer to and from the MBS program, but as this is a separate program it will not be discussed further in this document.

## **4.2 Course Requirements and Credit Transfer**

### **A. Minimum Numbers of Credit**

Both Plan A and Plan B require a total of 30 credits.

### **B. Minimum Grades**

There are three minimum grade requirements:

An average grade of B or better must be maintained for all courses.

An average grade of B or better must be maintained for the three core courses (Food Chemistry

Fundamentals, Food Biology Fundamentals, and Food Engineering Fundamentals). In calculating the core average grade, all three core courses are assumed to carry equal weights. Student may retake up to two core courses no more than once each in an attempt to meet the requirements of the program. Students retaking a core course to raise their grades should be advised that the course credits for a given course only count once towards a degree.

The School of Graduate Studies allows no more than nine credits of C grades on a graduate student transcript so additional C credits do not count towards a degree. The School of Graduate Studies also allows no more than one grade of "U" in courses that are graded S/U.

### **C. Special Topics (16:400:603)**

No more than 3 credits of Special Topics are allowed, except with the approval of the Graduate Program Director. Plan A students may register for up to 3 credits of Special Topics with the approval of a faculty member to work on a research project that is separate from their thesis research. Plan B students may register for up to 3 credits of Special Topics to write the critical essay.

### **D. Electives**

In addition to the 11 required core courses, at least 9 more credits must be taken in graduate-level courses, those numbered in the 500s and 600s. All upper-level undergraduate courses, those numbered in the 300s and 400s, must be pre-approved by the Graduate Program Director in order to count toward degree credits.

### **E. Undergraduate Courses for Graduate Credit**

MS students may enroll for up to 10 credits of undergraduate courses and use them toward the advanced degree provided the courses are at the 300 and 400 level and relevant to their area of study. Students should first discuss the relevance of such courses with their advisor and then obtain preapproval by the Graduate Program Director. In order to get graduate credit, such courses must be preceded with a "G" prefix during registration.

### **F. Transfer Credits**

With approval of the Graduate Program Director, a MS student may transfer a maximum of 12 graduate level course credits from other accredited institutions or other graduate programs at Rutgers University to satisfy the course requirements. Those credits must have earned grades of B or higher. Credits for laboratory, special topics, and seminar courses are not transferable. Students may request transfer of these courses after they have completed 12 credits at Rutgers with grades of B or higher. The Application for Transfer of Credit form is available on line. Questions about eligible courses should be directed to the Graduate Program Director.

## **4.3 MS Committee and Final Examination**

### **A. Thesis or Critical Essay Committee**

Thesis or Critical Essay committees are selected by the major advisor in consultation with the MS student. Although it is not required, the student is advised to form the committee early so that the members can provide input for the project.

The MS committee consists of a minimum of three members. The committee chair must be a full or associate member of the Food Science Graduate Program (not an affiliate member), and the other two committee members must be a full, associate, or affiliate member of the Food Science Graduate Program Faculty. Typically, the student's research advisor serves as the committee chair.

### **B. Final Examination**

A Plan A student must defend a thesis, or a Plan B student must defend a critical essay, before the committee during the final examination. As soon as the date for the examination is known, the student should report that date to the Graduate Program secretary. The student will provide the thesis or dissertation title, date, the time, the location, as well as the committee members. The secretary will then relay this information for posting on the Food Science website

No later than two weeks before the scheduled date, at the same time that the student provides a copy of the thesis, dissertation or proposal to the committee, the student will also provide that copy to the graduate program director and secretary via email. If a document is not provided by the two-week deadline the defense or exam may be rescheduled.

The student should provide sufficient time between the final examination and the School of Graduate Studies October, January, and May dated degree deadline dates to make any additions or changes that might be requested by the committee.

The student is informed whether or not they have passed the examination immediately after its completion. If the student fails the examination, the reasons for the decision are given at this time. The student may request that the reasons for the failure be provided in writing within one week of the final examination.

Upon completion of the final examination, the members of the committee sign the form indicating whether the student has passed or failed the examination. The Graduate Program Director must sign the form before the student submits it to the School of Graduate Studies.

## **5. MASTER OF PHILOSOPHY (M. Phil. Degree)**

The Master of Philosophy (M. Phil.) degree is considered intermediate between the degrees of Master of Science and Doctor of Philosophy. Most American universities do not award the M.Phil., although Rutgers University is one of a few to award it under certain circumstances. Students who intend to proceed toward the doctorate and who wish to acquire a MS degree in the course of their doctoral studies are advised to seek the MS. degree instead M.Phil. degree.

A minimum of 48 credits are required. At least 42 of them must be course credits. At least 33 of the course credits must be graduate-level courses numbered in the 500s and 600s, and of these at least 24 credits must be earned in courses taken at the university.

In order to qualify for this degree, the student must earn a grade of A in at least 12 credits of the graduate-level courses, with no more than 3 credits of C. All requirements for this degree must be completed within 4 consecutive academic years of first registration. Students for whom transfer of

credit is granted must complete their program within 1 year less per 12 credits transferred. No extensions of time will be granted. The applicant must have passed the PhD qualifying examination.

A student who has earned a MS degree at Rutgers is required to submit his MS thesis or critical essay in partial fulfillment of the writing requirements for the M. Phil. degree. A student who has not submitted a formal MS thesis or critical essay can meet the M. Phil. writing requirement with a critical essay that is written under the direction of a full or associate member of the graduate faculty and approved by two other members of the graduate faculty.

## **6. DOCTOR OF PHILOSOPHY (PhD Degree)**

### **6.1 Entering PhD Program**

A new student who possesses a MS in Food Science or a related discipline automatically enters the PhD program. A new student who possesses a B.S. degree may be admitted to the Food Science graduate program as a MS student or a PhD student. In both cases, the student typically must earn the MS degree before entering the PhD program. However, it is possible for the student to skip the MS degree in the following manner:

- A student who has been admitted as a MS student can apply for admission to the PhD program after publishing a research paper based on their graduate research at Rutgers in a peer-reviewed journal. The student must be first (senior) author of the paper. For such an application, the student must have the consent of their advisor, their thesis committee, and the Graduate Program Director. The student must submit proof of the acceptance of a manuscript for publication to the Graduate Program Director before filing the Change of Status form (available online).
- A student who is admitted to the PhD program with a B.S. degree must either earn a MS degree or publish a peer-reviewed journal article as first (senior) author prior to admission to candidacy for the degree of Doctor of Philosophy.

Students who earn a MS degree in the Food Science program must submit a Change of Status form in order to enter the PhD program; this application requires the consent of the Graduate Program Director. Only students who receive a Plan A MS degree from Rutgers may normally enter the PhD program. Students who have earned a Plan B MS degree must petition the Graduate Program Director if they wish to enter the PhD program. This petition must have the approval of the student's advisor and the Food Science Graduate Faculty and will be granted only in very unusual circumstances (e.g. the student is the senior author of a paper published in a peer-reviewed journal).

### **6.2 Degree Requirements for PhD**

Total Credits	72
Course Credits	At least 33 course credits consisting of the following. 12 Required Courses Credits: <ul style="list-style-type: none"> <li>▪ Food Chemistry Fundamentals, 3 credits (16:400:513)</li> <li>▪ Food Biology Fundamentals, 3 credits (16:400:514)</li> <li>▪ Food Engineering Fundamentals, 4 credits (16:400:507)</li> <li>▪ Initial PhD Seminar, 1 credit, (16:400:601 or 02, Section 02)</li> <li>▪ Final PhD Seminar, 1 credit, (16:400:601 or 02, Section 01)</li> </ul> At least 21 elective course credits
Research Credits	72 minus any course credits
Writing Requirement	Dissertation
Examinations	Written Qualifying Examination Oral Qualifying Examination Defense of Dissertation

### A. Required Credits

The PhD degree requires a total of 72 credits. At least 33 of those should be course credits, with the balance being research credits. For example, a student may take 33 course credits and 39 research credits or may take 40 course credits and 32 research credits, to satisfy the requirements of 72 credits.

### B. Minimum Grades

An average grade of B or better must be maintained for all courses.

An average grade of B or better must be maintained for the three core courses (Food Chemistry Fundamentals, Food Biology Fundamentals, and Food Engineering Fundamentals). In calculating the core average grade, all these three core courses are assumed to carry equal weights. Students retaking a core course to raise their grades should be advised that the course credits for a given course only count once towards a degree.

The School of Graduate Studies allows no more than nine credits of C grades on a graduate student transcript so additional C credits do not count towards a degree. The School of Graduate Studies also allows no more than one grade of "U" in courses that are graded S/U.

### C. Electives

In addition to the 12 required core courses, at least another 21 credits must be taken in graduate-level courses, those numbered in the 500s and 600s. No more than 3 credits of Special Topics may be included in these credits. All upper-level undergraduate courses (i.e. numbered in the 300s and 400s), must be pre-approved by the Graduate Program Director in order to count toward degree credits.

### D. Undergraduate Courses for Graduate Credit

PhD students can enroll for up to 12 credits of undergraduate courses and use them toward the advanced degree provided the courses are at the 300 and 400 level and relevant to their area of study. Students should first discuss the relevance of such courses with their advisor and then obtain preapproval by the Graduate Program Director. In order to get graduate credit, such courses must be

preceded with a “G” prefix during registration.

### **E. Transfer Credits**

Credit used to satisfy the requirements for the MS degree at Rutgers may also be used to satisfy the PhD requirements.

With approval of the Graduate Program Director, a PhD student may transfer a maximum of 24 graduate level course credits from other accredited institutions or other graduate programs at Rutgers University to satisfy the course requirements. Those credits must have earned grades of B or higher. Credits for laboratory, special topics, and seminar courses are not transferable. Students may request transfer of these courses after they have completed 12 credits at Rutgers with grades of B or higher. The Application for Transfer of Credit form is available online. Questions about eligible courses should be directed to the Graduate Program Director.

### **6.3 PhD Committees**

Oral qualifier and dissertation defense committees are selected by the major advisor in consultation with the student. The student is strongly advised to select the committee early so that the members can provide input for the research project. The Graduate Program Director must endorse the composition of these committees.

The committees for both the oral qualifier and the dissertation defense must contain at least four members. The first member, who serves as chair of the committee, must be a full member of the Graduate Program in Food Science. The second and the third member must be a full or associate member of the Graduate Program in Food Science.

The fourth member of the oral qualifying committee may be either an outside member or a member (full or associate) of the Graduate Program in Food Science. The fourth member of the dissertation defense **must** be an outside member, approved by the Graduate Program Director and appointed by the School of Graduate Studies, with research and/or academic credentials appropriate for such service. The outside member may be from outside the University but must in all cases be from outside the Graduate Program in Food Science. The student’s major advisor should submit the appointment request, in writing, to the graduate program director and provide a Curriculum Vitae or Biographical Sketch that includes degrees received, dates, institution names, and a list of publications. Students are personally responsible for requesting participation by each committee member selected.

### **6.4 Written PhD Qualifying Examinations**

Students must demonstrate competency in all three areas of food science before taking the PhD Written Qualifying Examination in their disciplinary specialty. Such competency is usually demonstrated by having an average grade of B or better in the three required courses Food Chemistry Fundamentals (16:400:513), Food Biology Fundamentals (16:400:514), and Food Engineering Fundamentals (16:400:515). Students must obtain written permission from their major advisor (expressed by letter or email to the Graduate Program Director) before taking this examination.

Written examinations may be taken in any one of the disciplinary areas: food chemistry, food biology, or food engineering. Students may choose the disciplinary area in which they wish to be examined.

All food science graduate students must pass their written qualifying exam by their fifth semester. Students failing to do so may be asked to provide an explanation in writing to the Graduate Program Director, accompanied by a plan for completing the exam at the earliest opportunity. This means that food chemistry PhD students must start the cumulative exam testing no later than the beginning of their third semester. Food biology and food engineering PhD students must sit for their first qualifying exam no later than their fourth semester. Students who have earned a MS degree from Rutgers University Food Science must take the written qualifying exam at the earliest possible opportunity after beginning their PhD. Students who have earned a MS degree from outside Rutgers University Food Science must take the written qualifying exam at the earliest possible opportunity after taking the required course in their area of concentration (biology, chemistry or engineering).

Students must be informed of their grades on the written qualifying examination within 30 days of the date of the examination. Students may obtain photocopies of their corrected examination paper from the Graduate Program Director and may discuss their answers and grades with the faculty member(s) who wrote and graded the questions.

#### **A. Written Qualifying Examination for Food Biology**

The Food Biology qualifying exam is held once a year during the first week of June. Six weeks prior to the exam, the exam committee chair solicits questions from the Food Science Graduate Program members. Members submit at least one question based on a topic area that is described by one or more peer reviewed publications. The exam chair, in consultation with program members, selects at least eight questions for the exam. One month prior to the exam, students are provided with the publications from which the questions are based. Students are provided with the questions on the day of the exam and must answer 5 of the questions. The exam last 8 hours. The passing grade for the exam is 75% (average grade of the 5 questions answered). Students are provided with their grades within 3 weeks on completing the exam. A student that does not score 75% on their first attempt, may sit for the exam one additional time before dismissal from the program. The exam committee reserves the right to modify the re-examination conditions, e.g. allowing remediation using a smaller set of questions, etc.

#### **B. Written Qualifying Examination for Food Chemistry**

The written qualifying examination for food chemistry is in the format of cumulative exams. Its purpose is to evaluate students' ability of critical thinking, critical analysis of the knowledge, design and solving food chemistry problems.

The cumulative exam will be offered six times a year, in February, March, April, September, October, and November. The format of the exam may differ at the discretion of the faculty but will always be due on the second Saturday of the month. Each student has total 9 chances and must pass 5 exams before failing 5 exams. Once a student starts the cumulative exam process, they must take 9 consecutive exams. Students can start taking the cumulative exam at any time, but since all food science graduate students must pass their written qualifying exam by their fifth semester, this means that food chemistry PhD students must start the cumulative exam testing no later than the beginning of their third semester. Students should sign up for their first exam at least one week prior to the exam but can withdraw before taking their first exam.

Each exam consists of questions based on readings from books or recent journal articles and includes

questions from only one faculty member. Only Pass or Fail grades will be given, where 70% is the passing grade.

Faculty will provide the scope of the exam by no later than 5 pm on the Thursday before each exam but may provide it earlier. Faculty will also make suitable arrangements with students taking the exam remotely. Faculty will grade the exams within 3 weeks of the exam due date.

The Food Chemistry Qualifying exam is only open to those students enrolled in the PhD program or doctoral track (thesis) MS program. It is not open to Plan B MS students.

### **C. Written Qualifying Examination for Food Engineering**

The purpose of the written qualifying exam for food engineering is to determine whether the candidate demonstrates the intellectual ability of a PhD and is capable of conceiving, organizing, proposing and conducting high quality independent research.

The Engineering Qualifying exam will be held up to two times a year, depending upon need. Food Engineering graduate students are expected to have a 3.25 grade point average or above but may be permitted to take the Qualifying Exam with a 3.0 grade point average or above if approved by the Qualifying Exam Chair and Graduate Program Director. Application must be made to take the exam and a letter (e-mail) of recommendation from the advisor must be sent to the Graduate Program Director and Qualifying Exam Chair. The students should sign up for the exam two months in advance but can withdraw up to two weeks before the exam (with legitimate reason) by sending emails to the Qualifying Exam Chair and Graduate Program Director. If a student fails the Exam, he/she may take the exam one more time. This second exam would be in the next exam cycle.

The Qualifying exam is intended to test a student's knowledge of the science and engineering of food systems and the student's ability to extend the knowledge and apply it to research. The following subject areas serve as the basis for the Engineering Qualifying Exam:

- Transport phenomena
- Food processing technologies
- Food materials and interface engineering
- Food Reaction engineering, including processing and post-processing stability
- Quantitative methods in Food Engineering

All members of the faculty may participate in recommending materials in the above subjects. Qualifying Exam Chair carefully selects the recommended materials for the exam.

Two manuscripts will be presented to the student four weeks before the exam. Additional questions/assignments based on the manuscript's content may be included. The manuscripts given the student will not require detailed knowledge of a specific subject but represent typical experimental or theoretical research problem in the field of food engineering. The student shall choose one of these manuscripts to review. After analyzing the problem, the student will present his/her analysis of the

problem in front of the Food Engineering Qualifying exam committee. Additionally, the student will be required to answer questions which apply knowledge from the Food Engineering curriculum.

The Qualifying Exam shall be given as an oral exam by a committee of three members of the food engineering faculty. Each member of the committee will vote pass or fail on the student's performance on the Exam, with the majority determining the result. If the student is retaking the exam, a discussion should take place to consider the overall performance of the student as a graduate student at Rutgers, before making a final decision. Students failing the exam may only retake the exam one time.

### **6.5 The Oral PhD Qualifying Examination (Admission to Candidacy)**

The oral qualifying examination is the final evaluation that a student undergoes prior to admission to candidacy for the degree of Doctor of Philosophy; successfully passing the oral examination results in official admission to candidacy for the PhD degree. The oral qualifying examination is scheduled only after the written examination has been passed. All food science graduate students must pass their oral qualifying exam by their sixth semester.

The oral qualifying examination concentrates, for the most part, on the student's specialized field (food biology, food chemistry or food engineering) with particular emphasis on the proposed research project. At the oral examination, the student defends a written dissertation proposal that describes their proposed program of research and explains its importance and relevance to the field. Students must discuss the content of their dissertation proposal with their major advisor prior to preparing it.

The oral examination has two purposes. It certifies that the student is fully qualified to be a PhD candidate and it certifies that the research plan, if successfully completed, would merit the conferral of a PhD degree. The oral examination should be taken as soon as possible after the written examination, and ideally no more than 6 months after the written examination.

As soon as the date for the examination is known, the student should report that date to the Graduate Program secretary. The student will provide the dissertation title, date, the time, the location, as well as the committee members. The secretary will then relay this information for posting on the Food Science website.

No later than two weeks before the scheduled date, at the same time that the student provides a copy of the proposal to the committee, the student will also provide that copy to the graduate program director and secretary via email. If a document is not provided by the two-week deadline the defense or exam may be rescheduled.

The proposal does not have a set format, but the student can model the proposal after that used for federal grants (i.e. NIH, NSF, USDA), or the format of the dissertation. The student should work with their advisor to determine the most suitable format. If the dissertation format is used, the document should **not** include the Rutgers University title page with signature lines. Typical sections in a PhD proposal might include introduction and/or literature review, aims and objectives, rationale and significance, methods, preliminary results, future work, potential pitfalls and problems, anticipated results and bibliography.

The public portion of the oral qualifying examination is open to all interested parties.

The form for Admission to Candidacy can be obtained online. Students should complete Part I of the form before the oral qualifying exam. Courses and grades being submitted in partial fulfillment of degree requirements must be listed on this form before the committee meeting. Admission to candidacy requires the signature of the committee members and the Graduate Program Director. After the examination, the form must be hand-delivered to the School of Graduate Studies (25 Bishop Place) for approval of the Dean; the form is then kept on file at the School of Graduate Studies until it is brought to the final examination.

Students are informed whether or not they passed the oral qualifying examination immediately after the completion of the examination. A student who fails the examination is informed at this time of the reasons for the decision. The student may request that the reasons for the failure be provided in writing within one week of the examination.

## **6.6 Dissertation Defense**

The dissertation defense is typically held at least one year after successfully passing the oral qualifying exam. The dissertation defense committee may have the same composition as the oral qualifying examination committee. The Graduate Program Director and the School of Graduate Studies prior to the defense must approve the composition of the Dissertation Committee. The outside member(s) must have research or academic qualifications appropriate for such a responsibility and must be approved by the Dean of the School of Graduate Studies well in advance of the defense. Students are personally responsible for requesting participation by each committee member selected.

As soon as the date for the examination is known, the student should report that date to the Graduate Program secretary. The student will provide the dissertation title, date, the time, the location, as well as the committee members. The secretary will then relay this information for posting on the Food Science website.

No later than two weeks before the scheduled date, at the same time that the student provides a copy of the dissertation to the committee, the student will also provide that copy to the graduate program director and secretary via email. If a document is not provided by the two-week deadline the defense or exam may be rescheduled.

The final defense examination must be advertised on all bulletin boards in the Food Science and Nutritional Sciences buildings and is open to all members of the Graduate Program in Food Science.

At the defense the doctoral candidate must defend the dissertation to assure the committee that they are deserving of the PhD degree. Students are informed whether or not they have passed immediately after completion of the defense. A student who fails is informed at this time of the reasons for the decision. The student may request that the reasons for the failure be provided in writing within one week of the defense.

The committee also has the option of recommending re-examination of the candidate and re-evaluation of the dissertation at a later date (following the addition of further experimental results, data analyses, background discussion, etc., to the dissertation). If the candidate is unable to comply with the requirements for re-examination, dismissal from the program is recommended to the Graduate Program Faculty through the Graduate Program Director. The graduate faculty, as in all cases dealing with such a

serious matter, can recommend alternative solutions or uphold the decision to dismiss.

## **7. ACADEMIC PERFORMANCE**

### **7.1 Academic Integrity**

All students must be familiar with the Rutgers University Academic Integrity Policy. Failure to uphold these principles of academic integrity threatens both the reputation of the University and the value of the degrees awarded to its students. Every member of the University community therefore bears a responsibility for ensuring that the highest standards of academic integrity are upheld.

### **7.2 Required to Maintain at Least a 3.0 Grade Point Average**

The Committee on Academic Standings and Standards reviews student transcripts twice a year. Those students with grade point average (GPA) below 3.0, with the concurrence of the graduate faculty, will be placed on academic probation. Students, who are unable to raise their GPA to 3.0 within two semesters, in the absence of mitigating circumstances, may be dismissed from the program by majority vote of the faculty.

### **7.3 Competency in All Areas of Food Science**

In addition to maintaining at least a 3.0 GPA, students must demonstrate competency in each of the core areas of food chemistry, food biology and food engineering. This will be demonstrated by an average grade of "B" or better in Food Chemistry Fundamentals (16:400:513), Food Biology Fundamentals (16:400:514) and Food Engineering Fundamentals (16:400:507), with all courses carrying equal weight, despite the fact that Food Engineering Fundamentals is a 4 credit course. Students retaking a core course in an effort to raise their grades should be advised that the course credits for a given course only count once towards a degree.

### **7.4 Time to Obtain Degree**

The Academic Standings and Standards Committee will monitor progress toward the MS and PhD degrees. Full-time MS degrees should be completed within 3 years of matriculation while part-time MS degrees should be completed within 6 years for Plan A and within 5 years for Plan B. Students who do not meet these guidelines will be referred to the graduate faculty with a recommendation for action up to and including dismissal from the Graduate Program in Food Science. A full-time PhD degree should be completed within 7 years after matriculation. Part-time PhD students should obtain their degrees within 10 years of matriculation.

### **7.5 Time Guidelines for Admission to Doctoral Candidacy**

Full-time PhD students should be admitted to candidacy within 3 years of the time they matriculate, and part-time PhD students should be admitted to candidacy within 5 years of the time they matriculate.

### **7.6 Incomplete Grades**

Failure to complete all requirements of a particular course may result in a grade of Incomplete (INC). All

course work required to fulfill an Incomplete must be completed within one year; an extension of time may be requested from the School of Graduate Studies with the approval of the Graduate Program Director. The policy of the School of Graduate Studies on Incomplete grades states that any student who has obtained more than one Incomplete will be allowed one semester to reduce the number to one (or none), after which time the student will not be allowed to register for additional courses until the Incompletes are completed or "abandoned". ("Abandoned" means that the student has agreed that the course may no longer be completed and the faculty has agreed to allow the student to continue with a Permanent Incomplete on his or her record.) Poor grades cannot be removed from the record by retaking the course and obtaining a better grade.

### **7.7 Matriculation Continued, Continuous Registration and Leaves of Absence.**

There may be circumstances that arise while a student is pursuing a degree that make it impossible for the student to be actively involved in either coursework or research for a given semester. Depending upon the particular situation and the status of the student, it may be advisable for the student to register for Matriculation Continued. This keeps the student "active" in the program. Doctoral students who have not taken their qualifying exams and have completed their coursework may use this registration for a maximum of two semesters until such time that the qualifying exam has been completed and research registrations may begin. **Doctoral students who have passed their qualifying examinations are not permitted to register for matriculation continued.** Master's students who have completed all requirements may use this registration unless they are engaged in thesis research on campus, in which case they must register for at least 1 credit of research.

Post-qualifying doctoral students and master's students who are doing laboratory work are required to register for research every fall and spring term until the completion of their degrees, even if this results in accumulations of research credits beyond the minimum required for the degree.

MS, and pre and post-qualifying PhD degree candidates who have not maintained continuous registration are considered by the University to have "dropped out" and must file a formal application for readmission.

Students in good academic standing, who must interrupt their studies temporarily, should apply for a leave of absence in writing with the Graduate Program Director. A student may be granted a leave (or leaves) of absence for a period not to exceed a total of 12 months.

Students must to be registered the semester they intend to graduate, with the following exceptions: A student must be registered in the prior Spring semester for October degree. A student must be registered in the prior Fall semester for a January degree. A student seeking a May degree must be registered in the current Spring semester.

### **7.8 Non-Degree or Non-Matriculated Students**

Under certain circumstances a student may apply for admission as a "non-degree" student. Sometimes these students are referred to as non-matriculated students, where the term matriculation means formal enrollment in the University. Applicants who wish to take courses as non-degree students must however apply through the Non-Degree Study Office. These applications will be reviewed as with any application for graduate study.

In some cases, the student is not interested in pursuing a graduate degree, but only wishes to take some courses at the graduate level. In other cases, the student wishes to "prove themselves" as capable of performing at the graduate level, prior to formal application for MS or PhD study. In this latter case, the students must take three core Food Science courses at the earliest possible opportunity and are also encouraged to formally apply for study at the MS or PhD level as early as possible.

Non-degree students are not permitted to accumulate more than 12 credits of graduate study. All non-degree students must obtain a special permission number for any graduate class they wish to take. Non-degree students that do not perform at the level expected (i.e. a B average), will not be permitted to register for additional courses.

Credits taken as a non-matriculated student will not immediately count towards a graduate degree. Once the student matriculates, they must accumulate 12 additional graduate credits as a matriculated student, before any non-matriculated credits can be transferred toward the degree.

## **8. OTHER POLICIES AND PROCEDURES**

Problems and concerns should be discussed with the Graduate Program Director who may then review them with the program faculty, and where applicable, with the department chair. Students having differences with other students or with a faculty member should speak in confidence with the Graduate Program Director, with the chairman of the department, or with any faculty member in whom they believe they can confide.

### **8.1 Guidelines on Time for Review and Assessment of Qualifying Exams, Theses and Dissertations Food Science Graduate Program**

The Food Science Graduate Program strives to maintain a culture of mutual respect between students and faculty members. Students must allow sufficient time for faculty members to review and assess their work and faculty members must be as prompt as circumstances allow in responding to their students with such assessments.

It is the responsibility of advisors and students to keep committees informed and engaged throughout the process of the student's research and to ensure that the committee is given adequate time to assess the final product before it is defended.

This section outlines specific rules concerning both the lead-time that students allow for review and assessment of qualifying exam documents, theses and dissertations and the response time for faculty members to inform students of such assessments and for providing feedback.

The student should submit material to their committee at least two weeks before an examination or other deadline. Any committee member has the right to refuse to review material provided with less than two-weeks' notice, and thus require the exam to be rescheduled.

Faculty advisors should review qualifying exam documents, theses and dissertations within four weeks of receiving a complete copy of the document (where "complete" is based on the advisor's judgment). A faculty advisor may require more than four weeks to review a document under certain conditions

(including but not limited to travel, illness, vacation, university holidays, end-of-semester workload and documents from multiple graduate students to review at the same time). At the request of the graduate student, The Food Science Graduate Program Director will review any situations where more than four weeks are required.

Students and faculty members should be in regular communication with each other with regard to these timelines. Students should alert faculty members to their intention to submit work at a certain time and faculty members should indicate their expectations for the timing of their responses.

## **8.2 Change of Major Advisor or Thesis Committee Membership**

Should a student's major advisor leave the University, the student must consult with the Graduate Program Director concerning the appointment of a new major advisor. The advisor may also request that their membership be continued for up to four years or until their students have graduated. Each request will be reviewed by the Graduate Program Director. Former members whose requests are denied must appeal in writing to the Graduate Program Director. The Graduate Program Director will assemble an ad hoc membership committee to review any written appeals.

Retiring Faculty must contact University Human Resources directly regarding current policies and procedures.

Students may request change in the faculty membership on their thesis committee in consultation with their major advisor and the Graduate Program Director. Substitutions in committee membership are the responsibility of the Graduate Program Director and will occur only if a member is unable to serve or if a student's dissertation topic changes, requiring a new dissertation director and/or modification in the committee. In cases other than these, approval for change in committee membership rests with the Dean of the School of Graduate Studies.

A student recommended for non-continuation in the program or denial of a degree may appeal this decision in person before a meeting of the Food Science Graduate Program Faculty. The student may request that their major advisor or another member of the program serve as their counselor in this appeal. The student may not be present during the deliberation phase of the appeal.

## **8.3 Dismissal from the Food Science Graduate Program**

Appeals of a decision to recommend dismissal of a student from the graduate program must be made in writing to the graduate faculty through the Graduate Program Director. Appeals of placement on probation (for example, conditions for admissions, re-examination requirements, etc.) must be made in writing to the Graduate Program Director.

## **8.4 Extension of Time Request**

Requests for extension of the deadline for satisfying the PhD qualifying examination requirements must be made in writing to the chair of the student's thesis committee with a copy to the Graduate Program Director. If the request is denied, the committee recommends to the graduate program director that the student be dismissed from the PhD program or transferred to MS degree status. The student may appeal this recommendation to the Graduate Program Faculty. Students may respond in writing to

negative evaluations of their progress. The student's response will be placed on file along with the written faculty evaluation.

### **8.5 Written Qualifying Examination**

Complaints concerning grades on the written qualifying examination should be addressed to the faculty members(s) who graded the question. If the complaint is not resolved satisfactorily between the student and the faculty member(s), the student may appeal in writing to the Graduate Program Director.

### **8.6 Grades**

Complaints concerning a course, test or assignment grade should be addressed to the instructor of the course. If the matter is not resolved satisfactorily between student and instructor, the student may appeal to the Graduate Program Director, who will attempt to resolve the dispute informally. If this attempt is unsuccessful, the student may appeal, in writing, to the Graduate Program Faculty.

### **8.7 Other Issues**

Other student appeals and complaints may be addressed to the Graduate Program Director, who will consult with all parties involved and propose a resolution to the problem. If this informal mediation is unsuccessful, the matter may be referred to the Graduate Program Faculty for a formal review and decision.

Students may appeal decisions of the Graduate Program Director or the Graduate Program Faculty to the Dean of School of Graduate Studies.