

Graduate Student Handbook

Department of Food Science at Rutgers University

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Table of Contents

1.	PHILOSOPHY OF THE FOOD SCIENCE GRADUATE PROGRAM.....	3
2.	GENERAL INFORMATION	4
2.1	ADVISORS.....	4
2.2	REGISTRATION AND COURSE REQUIREMENT.....	4
	A. FULL-TIME STUDENT STATUS	4
	B. REQUIRED CORE COURSES.....	4
	C. UNDERGRADUATE COURSES FOR GRADUATE CREDITS.....	4
	D. GRADUATE ASSISTANTSHIP.....	4
	E. TEACHING ASSISTANTSHIP	5
	F. GRADUATE FELLOWSHIP	5
	G. REDUCED CREDIT LOAD FOR INTERNATIONAL STUDENTS	5
	H. DROP/ADD.....	5
3.	SEMINARS IN FOOD SCIENCE.....	6
3.1	MINI-SEMINAR	6
3.2	SEMINAR IN FOOD SCIENCE	6
	A. REQUIRED SEMINARS FOR M.S. AND PH.D. STUDENTS	6
	B. ATTENDANCE EXPECTATION AND REQUIREMENT	6
	C. SEMINAR COMMITTEE	7
	D. WHO SHOULD REGISTER FOR SEMINAR	7
	E. SEMINAR ORIENTATION & LOTTERY FOR PRESENTATION SCHEDULE	7
	F. POST-SEMINAR EVALUATION	7
4.	MASTER OF SCIENCE (M.S. Degree).....	8
4.1	OPTIONS OF M.S. DEGREE	8
4.2	COURSE REQUIREMENTS AND CREDIT TRANSFER.....	9
	A. MINIMUM NUMBERS OF CREDIT	9
	B. MINIMUM GRADES.....	9
	C. SEMINAR.....	9
	D. FOOD ENGINEERING FUNDAMENTALS (16:400:507).....	9
	E. SPECIAL TOPICS (16:400:603).....	10
	F. ELECTIVES.....	10
	G. UNDERGRADUATE COURSES FOR GRADUATE CREDIT	10
	H. TRANSFER CREDITS	10
4.3	M.S. COMMITTEE AND FINAL EXAMINATION	10

	A. THESIS OR CRITICAL ESSAY COMMITTEE	10
	B. THESIS OR CRITICAL ESSAY DEFENSE (FINAL EXAMINATION)	10
5.	MASTER OF PHILOSOPHY (M. Phil. Degree)	12
6.	DOCTOR OF PHILOSOPHY (Ph.D. Degree)	13
6.1	DEGREE REQUIREMENTS FOR PH.D.	13
	A. REQUIRED CREDITS	13
	B. MINIMUM GRADES	13
	C. SEMINARS	13
	D. FOOD ENGINEERING FUNDAMENTALS (16:400:507)	14
	E. ELECTIVES	14
	F. UNDERGRADUATE COURSES FOR GRADUATE CREDIT	14
	G. TRANSFER CREDITS	14
6.2	ENTERING PH.D. PROGRAM	15
6.3	PH.D. COMMITTEES	15
6.4	WRITTEN PH.D. QUALIFYING EXAMINATIONS	16
	A. WRITTEN QUALIFYING EXAMINATION FOR FOOD BIOLOGY	16
	B. WRITTEN QUALIFYING EXAMINATION FOR FOOD CHEMISTRY	17
	C. WRITTEN QUALIFYING EXAMINATION FOR FOOD ENGINEERING	18
6.5	ORAL PH.D. QUALIFYING EXAMINATION AND ADMISSION TO PH.D. CANDIDACY	18
6.6	DISSERTATION DEFENSE (FINAL EXAMINATION)	19
7.	ACADEMIC PERFORMANCE	21
7.1	REQUIRED TO MAINTAIN AT LEAST A 3.0 GRADE POINT AVERAGE	21
7.2	COMPETENCY IN ALL AREAS OF FOOD SCIENCE	21
7.3	TIME TO OBTAIN DEGREE	21
7.4	TIME GUIDELINES FOR ADMISSION TO DOCTORAL CANDIDACY	21
7.5	INCOMPLETE GRADES	21
8.	PROCEDURES IF THINGS GO WRONG	22
8.1	CHANGE OF MAJOR ADVISOR OR THESIS COMMITTEE MEMBERSHIP	22
8.2	DISMISSAL FROM THE FOOD SCIENCE GRADUATE PROGRAM	22
8.3	EXTENSION OF TIME REQUEST	22
8.4	WRITTEN QUALIFYING EXAMINATION	22
8.5	GRADES	23
8.6	OTHER ISSUES	23

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 M.S., and Ph.D. 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 all knowledge must be communicated to the larger world.

2. GENERAL INFORMATION

This Food Science Graduate Student Handbook supplements and expands upon the official regulations of the Graduate School—New Brunswick that are summarized in the opening pages of the current Graduate School—New Brunswick Catalog, which is available on-line at http://catalogs.rutgers.edu/generated/nb-grad_current/.

2.1 Advisors

Upon arrival, each student should discuss his/her proposed goals, research interests and course needs with the Graduate Director. Each student is expected to become familiar with the regulations published in this Food Science Graduate Student Handbook and the Graduate School-New Brunswick Catalog.

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 Director may assign an interim faculty advisor.

2.2 Registration and Course Requirement

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

A. Full-time Student Status

A full-time student must register for at least 9 credits per semester. There is no extra charge for credits beyond the 12 credit load; however, students cannot register for more than 16 credits without special permission from the Dean of the Graduate School. 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 after matriculation. 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 and the Graduate Director. All upper-level undergraduate courses must be pre-approved by the Graduate Director. In order to get graduate credit, such courses must be preceded with a "G" prefix during registration.

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. 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.

“E” credits do not count toward degree credits. No tuition is charged for “E” credits.

G. Reduced Credit Load for International Students

To comply with federal regulations, international students must register for at least 9 credits per semester, unless they have earned close to the 30 credits required for the M.S. degree or close to the 72 credits required for the Ph.D. degree. In the latter case, the student may submit the Reduced Credit/Course Load Form to the Graduate Director for approval. Advanced students may be allowed to register for as few as 1 credit per semester.

Link to form (http://internationalservices.rutgers.edu/forms/Reduced_Credit_Course_Load_Form.pdf).

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.

3. SEMINARS IN FOOD SCIENCE

3.1 Mini-Seminar

All entering students are recommended to register for “Mini-Seminar” (16:400:601, Section 03) offered every fall semester. Although this course is not required, it is highly recommended for all students, especially those whose native language is not English. The course is designed to teach the students practical skills in presenting a seminar in an effective and interesting manner.

3.2 Seminar in Food Science

This Seminar is offered every fall and spring to fulfill the requirements of the M.S Seminar (16:400:601 or 02, Section 01), the Initial Ph.D. Seminar (16:400:601 or 02, Section 02), and the Final Ph.D. Seminar (16:400:601 or 02, Section 01). Note that the information below is related to this Seminar, not to the Mini-Seminar above.

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 considers 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 and this manifests itself in the numerous times our students have given award-winning presentations at national meetings and how well they do when asked to present a seminar as part of the job interview process.

A. Required Seminars for M.S. and Ph.D. Students

M.S. students are required to take 1 credit of M.S. Seminar. Ph.D. students are required to 1 credit of Initial Ph.D. Seminar and 1 credit of Final Ph.D. 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. Exceptions to this requirement are allowed only in rare instances, with the approval of the Graduate Director and the Seminar Chair, when such attendance has clearly become onerous due to a change in circumstance while in the program (for example, relocation to a distant city or extensive job-related travel).

During the semester, the students registered for Seminar are required to fulfill the attendance requirement of 14 seminars and give their seminar presentations. For each seminar not attended, the final grade will be dropped by one-half letter. In addition, all full-time students, even if not registered for the seminar course, are expected to attend.

Part-time students whose jobs do not permit regular attendance may request from the current Seminar Chair permission to complete the 14 seminar attendance requirement over two consecutive terms. In this case, the student will register for Seminar in the second term.

C. Seminar Committee

The Seminar Committee responsible for seminar each semester shall consist of the Seminar Chair and a second faculty member who will assume the position of Seminar Chair in the following semester. Two student representatives selected by the Food Science Graduate Student Association (GSA) also serve on the committee. Students may rotate on and off the committee but students may not be enrolled in Seminar and serve on the Seminar Committee concurrently.

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 Chair 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. Final schedules will be posted on the department website. No student may take a grade of "Incomplete" once the schedule has been set. In the rare instance that this may be unavoidable, students who cancel their seminar once the schedule has been set, will be penalized by having their final grade lowered by one letter grade.

No student may take a grade of "Incomplete" once the schedule has been set.

F. Post-Seminar Evaluation

Following each session, the Seminar Committee will meet with each speaker and their advisor for the purpose of providing constructive feedback and to evaluate the strengths and weaknesses of the seminar. The objective of this dialogue is to provide suggestions that will strengthen future presentations. The Faculty Coordinator, taking into account the evaluations of the other faculty member and student representatives, determines the grade for 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 at the Seminar website (<http://www.foodsci.rutgers.edu/graduate/seminar.html>), and not on scientific content or data.

4. MASTER OF SCIENCE (M.S. Degree)

4.1 Options of M.S. Degree

Student must choose one of the following 2 options: Plan A (M.S. with Thesis) and Plan B (M.S. 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"> ▪ Food Chemistry Fundamentals 3 credits (16:400:513) ▪ Food Biology Fundamentals 3 credits (16:400:514) ▪ Food Engineering Fundamentals 4 credits (16:400:507) ▪ Seminar, 1 credit (16:400:601 or 02, Section 01) 10 elective course credits	11 Required Courses Credits: <ul style="list-style-type: none"> ▪ Food Chemistry Fundamentals 3 credits (16:400:513) ▪ Food Biology Fundamentals 3 credits (16:400:514) ▪ Food Engineering Fundamentals 4 credits (16:400:507) ▪ Seminar, 1 credit (16:400:601 or 02, Section 01) 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 Ph.D. 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 Ph.D. complete the Plan A degree option. Plan B degree recipients are not permitted to continue for the Ph.D. degree, except under unusual circumstances.

The Plan A M.S. 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 Ph.D. 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 M.S. degree.

The Plan B M.S. 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 Ph.D. degree—thus the Plan B M.S. 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 Director.

4.2 Course Requirements and Credit Transfer

A. Minimum Numbers of Credit

The minimum numbers of credits are the same for Plan A or Plan B. Both plans require a total of 30 credits.

B. Minimum Grades

There are two minimum grade requirements. First, an average grade of B or better must be maintained for all courses. Second, 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 average grade, all these three core courses are assumed to carry equal weights.

C. Seminar

M.S. Students must take 1 credit of Seminar (16:400:601 or 02, Section 01) close to the end of their graduate study. Plan A students are required to present one seminar on the results of their thesis research. Plan B students are required to present one seminar on the topic of their critical essay.

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. Exceptions to this requirement are allowed only in rare instances when such attendance has clearly become onerous due to a change in circumstance while in the program (for example, relocation to a distant city or extensive job-related travel).

During the semester in which you register for seminar, you are to fulfill the attendance requirement of 14 seminars and give your own seminar presentation. For each seminar not attended, the final grade will be dropped by one-half letter. In addition, all full-time students, even if not registered for the seminar course, are expected to attend.

Part-time students whose jobs do not permit regular attendance may request from the current Seminar Chair, permission to complete the 14 seminar attendance requirement over two consecutive terms. In this case, the student will register for Seminar in the second term.

D. Food Engineering Fundamentals (16:400:507)

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 that the student does not need to take the course, but another food science graduate course(s) are need to replace the four credits.

E. Special Topics (16:400:603)

No more than 3 credits of Special Topics are allowed, except with the approval of the Graduate 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. Plan B students may register for up to 3 credits of Special Topics to write the critical essay.

F. 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 Director in order to count toward degree credits.

G. Undergraduate Courses for Graduate Credit

M.S. 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 Director. In order to get graduate credit, such courses must be preceded with a "G" prefix during registration.

H. Transfer Credits

With approval of the Graduate Director, a M.S. 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 from the graduate secretary. Questions about eligible courses should be directed to the Graduate Director.

4.3 M.S. Committee and Final Examination

A. Thesis or Critical Essay Committee

A M.S. student, in consultation with his/her research advisor, must form a thesis committee (for Plan A) or a critical essay committee (for Plan B). Although it is not required, the student is advised to form the committee early so that the members can provide input for the research project.

The M.S. committee consists of a minimum of three members. The committee chair must be a full or associate member (not adjunct member), and the other two committee members must be a full, associate, or adjunct member of the Food Science Graduate Program Faculty (<http://foodsci.rutgers.edu/graduate/gradFaculty.html>). Typically, the student's research advisor serves as the committee chair.

B. Thesis or Critical Essay Defense (Final Examination)

Typically close to the end of the graduate study, 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. The student is required to provide a copy of the thesis or critical to the committee at least two weeks before the examination. The student should provide sufficient time between the final examination and the Graduate School 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 he or she has 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 in Black ink indicating whether the student has passed or failed the examination. The Graduate Director signs the form once revisions, if any, have been made to the thesis and a PDF copy of the thesis or critical essay is submitted to him.

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. Eligible students who intend to proceed toward the doctorate and who wish to acquire a M.S. degree in the course of their doctoral studies are advised to seek the M. Phil. degree instead of (or in addition to) the M.S. 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 Ph.D. qualifying examination.

A student who has earned a M.S. degree at Rutgers is required to submit his M.S. thesis or critical essay in partial fulfillment of the writing requirements for the M. Phil. degree. A student who has not submitted a formal M.S. 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 Program Faculty and approved by two other members of the Graduate Program Faculty.

6. DOCTOR OF PHILOSOPHY (Ph.D. Degree)

6.1 Degree Requirements for Ph.D.

	Requirement for Ph.D. Degree
Total Credits	72
Course Credits	<p>At least 33 course credits consisting of the following.</p> <p>12 Required Courses Credits:</p> <ul style="list-style-type: none"> ▪ Food Chemistry Fundamentals 3 credits (16:400:513) ▪ Food Biology Fundamentals 3 credits (16:400:514) ▪ Food Engineering Fundamentals 4 credits (16:400:507) ▪ Initial Ph.D. Seminar, 1 credit (16:400:601 or 02, Section 02) ▪ Final Ph.D. Seminar, 1 credit (16:400:601 or 02, Section 01) <p>At least 11 elective course credits</p>
Research Credits	72 – course credits
Writing Requirement	Dissertation
Examinations	<p>Written Qualifying Examination</p> <p>Oral Qualifying Examination</p> <p>Defense of Dissertation</p>

A. Required Credits

The Ph.D. 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

First, an average grade of B or better must be maintained for all courses. Second, 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 average grade, all these three core courses are assumed to carry equal weights.

C. Seminars

All doctoral students are required to take 2 credits of Seminar.

The Initial Ph.D. Seminar (16:400:601 or 02, Section 02) should be targeted to a general audience, with the intent of introducing and describing the overall scope of the student's research problem. The Initial Ph.D. Seminar may consist solely of a critical literature review, or may combine a critical literature review with some preliminary experimental results.

The Final Ph.D. Seminar (16:400:601 or 02, Section 01) is intended to highlight specific results of the dissertation research project, and is therefore presented shortly before completion of the Ph.D. degree. Although Final Ph.D. Seminars are oriented towards presentation of key results, they must also contain appropriate background information in order to familiarize the audience with the topic area. Final Ph.D. Seminars may be given in conjunction with the dissertation defense. Immediately after presenting such a Final Ph.D. Seminar, the student would be excused from the seminar to attend the dissertation defense.

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. Exceptions to this requirement are allowed only in rare instances when such attendance has clearly become onerous due to a change in circumstance while in the program (for example, relocation to a distant city or extensive job-related travel).

During the semester in which you register for seminar, you are to fulfill the attendance requirement of 14 seminars and give your own seminar presentation. For each seminar not attended, the final grade will be dropped by one-half letter. In addition, all full-time students, even if not registered for the seminar course, are expected to attend.

Part-time students whose jobs do not permit regular attendance may request from the current Seminar Chair, permission to complete the 14 seminar attendance requirement over two consecutive terms. In this case, the student will register for Seminar in the second term.

D. Food Engineering Fundamentals (16:400:507)

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 that the student does not need to take the course, but another food science graduate course(s) are need to replace the four credits.

E. Electives

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

F. Undergraduate Courses for Graduate Credit

Ph.D. 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 Director. In order to get graduate credit, such courses must be preceded with a "G" prefix during registration.

G. Transfer Credits

Credit used to satisfy the requirements for the M.S. degree at Rutgers may also be used to satisfy the Ph.D. requirements.

With approval of the Graduate Director, a Ph.D. 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 from the graduate secretary. Questions about eligible courses should be directed to the Graduate Director.

6.2 Entering Ph.D. Program

A new student who possesses a M.S. in Food Science or a related discipline automatically enters the Ph.D. program.

A new student who possesses a B.S. degree may be admitted to our graduate program as a M.S. student or a Ph.D. student. In both cases, the student typically must earn the M.S. degree before entering the Ph.D. program. However, it is possible for the student to skip the M.S. degree in the following manner:

- For a M.S. student who has been admitted to apply for admission to the Ph.D. program after publication in a refereed journal of a research paper based on their graduate research at Rutgers; 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 Director. The student must submit proof of the acceptance of a manuscript for publication to the Graduate Director before filing the Change of Status form (available from the graduate secretary).
- A student who is admitted the Ph.D. program with a B.S. degree must either earn a M.S. degree or publish a referred journal as first (senior) author prior to admission to candidacy for the degree of Doctor of Philosophy.

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

6.3 Ph.D. Committees

A Ph.D. student, in consultation with the research advisor, must select a committee for the oral qualifier and a committee for the dissertation defense. It is suggested, but not required, that the members of these two committees be the same. The student is strongly advised to select the committee early so that the members can provide input for the research project. The Graduate 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, associate, or adjunct 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, associate, or adjunct) of the Graduate Program in Food Science. However, the fourth member of the dissertation defense must be an outside member, approved by the Graduate Director and appointed by the Graduate School—New Brunswick, with research and/or academic credentials appropriate for

such service; the outside member should be from outside the University when possible 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 Ph.D. Qualifying Examinations

Students must demonstrate competency in all three areas of food science before taking the Ph.D. 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 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. Written qualifying examinations for the Ph.D. in food biology and food engineering are scheduled twice yearly, in January and June.

All faculty members as well as those students who are qualified Ph.D. candidates are encouraged to submit questions to the faculty area coordinator. An area examination committee composed of faculty members responsible for each disciplinary area selects questions. Each question is graded by the individual who submitted it on a 0-100 basis. After grading is completed, the area examination coordinator will compile the grades and review them with the faculty examination committee to determine if the student has passed or failed the examination. A student, upon the recommendation of the committee, may be required to retake all or part of the examination. Students may only sit for the examination, or parts of the examination, twice. The area examination committee may also recommend that the student no longer be permitted to continue as a candidate for the Ph.D. degree. The student would then not be allowed to take the oral examination and would be so notified (with the concurrence of the faculty) by the major advisor, in writing.

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 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

Students taking the Food Biology written qualifying examination must have competence in the course content of Food Biology Fundamentals (16:400:514). While this course is the basis for the examination, the questions will also test the student's ability to critically evaluate data and develop experimental approaches to address problems in the areas of (1) food biochemistry/molecular biology, (2) food microbiology/food safety, and (2) nutrition/sensory science. The student has the choice of answering three questions from one area, two from the second, and one from the third. To pass the examination, the student must receive an overall grade of at least 75%, with no lower than 70% for any of the three areas.

The examination is given twice yearly, in January and July. All faculty members as well as those students who are qualified Ph.D. candidates are encouraged to submit questions to the faculty area coordinator. An area examination committee composed of faculty members responsible for each disciplinary area

selects questions. Each question is graded by the individual who submitted it on a 0-100 basis. After grading is completed, the area examination coordinator will compile the grades and review them with the faculty examination committee to determine if the student has passed or failed the examination. A student, upon the recommendation of the committee, may be required to retake all or part of the examination. Students may only sit for the examination, or parts of the examination, twice. The area examination committee may also recommend that the student no longer be permitted to continue as a candidate for the Ph.D. degree. The student would then not be allowed to take the oral examination and would be so notified (with the concurrence of the faculty) by the major advisor, in writing.

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

Examination timeline:

- For students holding the M.S. degree in Food Science from Rutgers University, the examination should be taken within one semester after entering the Ph.D. track in the program.
- For students holding an M.S. degree from another institution, the examination should be taken within one semester after completion Food Biology Fundamentals.
- For students holding the B.S. degree that wish to bypass the M.S. degree, the examination should be taken within one semester after completion of Food Biology Fundamentals. If the student fails the examination, they must complete the M.S. degree before the examination can be taken a second time.

B. Written Qualifying Examination for Food Chemistry

The written qualifying examination for food chemistry is in the format of cumulative exam. 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 held six times a year, in February, March, April, September, October, and November, on the second Saturday morning from 9:00 am to 12:00 pm. Each student has total 9 chances, and has to pass 5 before failing 5 exams. All students have to finish them after they join the Ph.D. program for 5 semesters. Once a student starts to take the cumulative exam, he/she has to take 9 consecutive exams. Students can start taking the cumulative exam anytime. Each time, only one faculty member will give questions from books or recent food science journals. Only Pass or Fail (with 70% as the pass grade) will be given.

The professor will provide the scope of the exam 5 pm on the Thursday before each exam. The students should sign up for the exam one week ahead, but can withdraw before taking the first exam.

The results of cumulative exams for food chemistry students will be reviewed after two years of their Ph.D. studies. Any request for the extension of cumulative exams beyond the three-year period requires a majority vote of the chemistry Graduate Program Faculty.

Students enrolled in the M.S. program only cannot take the cumulative exam. Only those students enrolled in the direct Ph.D. program or the M.S./Ph.D. program can take the exam.

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 Ph.D. and is capable of conceiving, organizing, proposing and conducting high quality independent research.

The Engineering Qualifying exam will be held two times a year, in February and June. All engineering students have to pass it before the end of the third year of their Ph.D. studies. Students are expected to have a 3.25 grade point average or above in graduate courses 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 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 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 it one more time. This second exam should 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 in an envelope 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 standing committee. Additionally, the student will be required to answer questions which apply knowledge from the Food Engineering curriculum.

6.5 Oral Ph.D. Qualifying Examination and Admission to Ph.D. 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. Passing the oral examination successfully results in official admission to candidacy for the Ph.D. degree.

A "Ph.D. student" must pass both the written and oral qualifying exams before becoming a "Ph.D. candidate". The oral qualifying examination is scheduled only after the written examination has been passed. For Ph.D. students who have not earned a M.S. degree, a referred journal as first (senior) author is also required for the admission to the Ph.D. candidacy.

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 Ph.D. candidate and it certifies that the research plan, if successfully completed, would merit the conferral of a Ph.D. degree. The oral examination should be taken as soon as possible after the written examination, but in no case should be taken more than 6 months after the written examination.

The oral qualifying examination must be advertised on all bulletin boards in the Food Science and Center for Advanced Food Technology (CAFT) buildings and is open to all members of the Graduate Program in Food Science.

The form for Admission to Candidacy should be obtained from the office of the Graduate Director (or the Graduate School, 25 Bishop Place). Shortly before you plan to take the oral qualifying examination, you should complete Part I of the form. 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 Director. After the examination, the form must be hand-delivered to the Graduate School (25 Bishop Place) for approval of the Dean; the form is then kept on file at the Graduate School 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. Students failing the exam may only retake the exam one time.

6.6 Dissertation Defense (Final Examination)

The dissertation defense committee may have the same composition as the oral qualifying examination committee. The Graduate Director and the Graduate School 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 Graduate School well in advance of the defense. Students are personally responsible for requesting participation by each committee member selected.

The University requires that the Ph.D. degree not be conferred until after one academic year beyond the date of the oral qualifying examination, that is, beyond admission to candidacy for the Ph.D. degree.

The final defense examination must be advertised on all bulletin boards in the Food Science and Center for Advanced Food Technology (CAFT) 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 the candidate deserves the Ph.D. degree. The candidate is informed whether or not he or she has passed immediately after completion of the defense. A candidate who fails is informed at this time of the reasons for the decision, and he or she 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 Director. The Graduate Program 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 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 Program 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.

7.2 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.

7.3 Time to Obtain Degree

The Academic Standings and Standards Committee will monitor progress toward the M.S. and Ph.D. degrees. Full-time M.S. degrees should be completed within 3 years of matriculation while part-time M.S. 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 Program Faculty with a recommendation for action up to and including dismissal from the Graduate Program in Food Science. A full-time Ph.D. degree should be completed within 7 years after matriculation. Part-time Ph.D. students should obtain their degrees within 10 years of matriculation.

7.4 Time Guidelines for Admission to Doctoral Candidacy

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

7.5 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 Graduate School with the approval of the Graduate Director. The policy of the Graduate School 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 Graduate 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.

8. PROCEDURES IF THINGS GO WRONG

Problems and concerns should be discussed with the Graduate Director who may then review them with the Graduate 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 Director, Department Chairman, or with any faculty member in whom they believe they can confide.

8.1 Change of Major Advisor or Thesis Committee Membership

Should a student's major advisor leave the University, the student must consult with the Graduate Director concerning the appointment of a new major advisor. After retirement, a major professor, as a Professor Emeritus, can serve as the major advisor (chair) of a committee established prior to retirement. Emeritus professors may serve on new committees as "additional" members only (that is, they do not count toward the number of program or outside members required.) A student may request a change in major advisor by consulting with the Graduate Director.

Students may request change in the faculty membership on their thesis committee in consultation with their major advisor and the Graduate Director. Substitutions in committee membership are the responsibility of the Graduate 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 Graduate School-New Brunswick.

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.

8.2 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 Program Faculty through the Graduate Director. Appeals of placement on probation (for example, conditions for admissions, re-examination requirements, etc.) must be made in writing to the Graduate Director.

8.3 Extension of Time Request

Requests for extension of the deadline for satisfying the Ph.D. qualifying examination requirements must be made in writing to the chair of the student's thesis committee with a copy to the Graduate Director. If the request is denied, the committee recommends to the graduate program director that the student be dismissed from the Ph.D. program or transferred to M.S. 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.

8.4 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 Director.

8.5 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 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.

8.6 Other Issues

Other student appeals and complaints may be addressed to the Graduate 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 Director or the Graduate Program Faculty to the Dean of Graduate School—New Brunswick.