FOOD SCIENCE, PH.D.

The graduate program in the Department of Food Science ranks among the best of its kind in the United States. Strong faculty research groups exist in food chemistry, food engineering, food microbiology, and food safety. Master’s and Ph.D. tracks in these areas combine an array of in-depth courses with the use of advanced research methods for studying food properties: chemical, physical, physiological, and bioactive characteristics; material properties; microbial control and safety; sensory quality; procedures for the processing, storage, and preservation of foods.

Research areas in which the department has special expertise include: chemical attributes of proteins, enzymes, lipids, flavors, bioactive components, and pigments; processes for crystallizing, separating, freezing, and drying; food safety (detection, control, and mechanistic action of pathogenic microorganisms, and undesirable chemicals in food); process optimization and validation of critical processing limits. Commodity foci include: dairy products, confectionery products, fruits and vegetables, muscle foods, and fermented products.

The department occupies Babcock Hall, a modern building with excellent facilities for instruction and research. Availability of appropriate instruments, equipment, and pilot-plant facilities enables research on the above topics to be conducted in a manner that has impact worldwide.

About 40–50 students from many countries are currently pursuing M.S. and Ph.D. degrees in the areas mentioned above. This includes some graduate students working in programs associated with the Food Research Institute.

Individuals obtaining advanced degrees in food science will find employment opportunities in academic instruction and research, government research or regulatory programs, and industrial research, development, or quality assurance. Historically, the department’s placement record for graduating students has been very good.

FUNDING

Financial assistance is available to qualified individuals in the form of research assistantships, teaching assistantships, or fellowships. These are awarded on a competitive basis and renewed annually pending satisfactory progress, with most research assistantships offered entirely by individual faculty linked to specific research grants. The terms of these appointments are initially defined in the letter of offer to the student.

REQUIREMENTS

MINIMUM DEGREE REQUIREMENTS AND SATISFACTORY PROGRESS

To make progress toward a graduate degree, students must meet the Graduate School Minimum Degree Requirements and Satisfactory Progress (http://guide.wisc.edu/graduate/#policiesandrequirementstext) in addition to the requirements of the program.

DOCTORAL DEGREES

Ph.D.

MINIMUM GRADUATE DEGREE CREDIT REQUIREMENT

51 credits

MINIMUM GRADUATE RESIDENCE CREDIT REQUIREMENT

32 credits

MINIMUM GRADUATE COURSEWORK (50%) REQUIREMENT

At least half of the certified* degree coursework (26 credits out of 51 total credits) must be completed in graduate-level coursework; courses with the Graduate Level Coursework attribute are identified and searchable in the university’s Course Guide (http://my.wisc.edu/CourseGuideRedirect/BrowseByTitle).

PRIOR COURSEWORK REQUIREMENT: GRADUATE WORK FROM OTHER INSTITUTIONS

Prior graduate-level coursework from other institutions may not count toward minimum credit requirements for the major, but may satisfy specific food science course requirements. No more than 6 credits from prior graduate level coursework may be applied toward fulfillment of the distributed minor requirement. Coursework earned ten or more years prior to admission to a doctoral degree is not allowed to satisfy requirements.

PRIOR COURSEWORK REQUIREMENTS: UW–MADISON UNDERGRADUATE

Prior coursework as a UW–Madison undergraduate student may not count toward minimum credit requirements for the major, but may satisfy specific food science course requirements.

PRIOR COURSEWORK REQUIREMENTS: UW–MADISON UNIVERSITY SPECIAL

Prior coursework taken as a University Special student may not count toward minimum credit requirements for the major, but may satisfy specific food science course requirements.

CREDITS PER TERM ALLOWED

15 credits

PROGRAM-SPECIFIC COURSES/CREDITS REQUIRED

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>FOOD SCI 410</td>
<td>Food Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>FOOD SCI 432</td>
<td>Principles of Food Preservation</td>
<td>3</td>
</tr>
<tr>
<td>FOOD SCI/ 325</td>
<td>Food Microbiology</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Select one Statistics course</td>
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<tr>
<td></td>
<td>Select one of the following:</td>
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<tr>
<td></td>
<td>FOOD SCI 799 Practicum in Food Science</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Teaching</td>
<td></td>
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<tr>
<td></td>
<td>TA position and teaching/learning training course</td>
<td></td>
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<tr>
<td>FOOD SCI 900</td>
<td>Seminar Advanced ¹</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Select 8 credits of graduate-level (600, 610-679, 700 and above) Food Sci or closely related courses</td>
<td></td>
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</tbody>
</table>

¹ Two graded graduate seminars are required.

Certified coursework is a specified plan of courses unique to each student that must be completed to satisfy the requirements for their
graduate program. This plan is approved by the student's graduate program advisory committee (GPAC) and is stipulated in the document Certification of Coursework in Food Science. Courses students take beyond the "certified" coursework plan are not included in calculating graduate coursework requirements.

DOCTORAL MINOR/BREADTH REQUIREMENTS
The Graduate School requires doctoral programs to have a doctoral minor requirement to achieve breadth. Ph.D. candidates in food science must complete the requirements for an Option A minor (all coursework within a single department) or Option B (distributed) minor (related courses from more than one department). Option A minor: credit requirements are set by the host department where the courses are taken. Option B (distributed) minor: 10 credits (courses numbered 500 or above) are required and approved by the student's graduate program advisory committee (GPAC).

Minor coursework must be completed before, or by end of, the semester in which the prelim is taken.

OVERALL GRADUATE GPA REQUIREMENT
3.00

OTHER GRADE REQUIREMENTS
The Graduate School requires an average grade of B or better in all coursework (300 or above, not including research credits) taken as a graduate student unless conditions for probationary status require higher grades. Grades of incomplete (I) are considered to be unsatisfactory if they are not removed during the next enrolled semester.

PROBATION POLICY
Candidates not making satisfactory progress will be placed on probation. If this probationary status is not resolved by the end of the semester in which it is initiated, the candidate may be dismissed by their faculty advisor.

The Graduate School regularly reviews the record of any student who earned grades of BC, C, D, F, or Incomplete in a graduate course (300 or above), or grade of U in research credits. This review could result in academic probation with a hold on future enrollment or in being suspended from the Graduate School.

ADVISOR/COMMITTEE
Every graduate student is required to have an advisor. To ensure that students are making satisfactory progress toward a degree, the Graduate School expects them to meet with their advisor on a regular basis. Students can be suspended from the Graduate School if they do not have an advisor. An advisor is a faculty member or affiliate faculty member from the major department responsible for providing advice regarding graduate studies. The student’s graduate program advisory committee (GPAC) also is involved in advising of the student in various stages of their studies to monitor and ensure they are making satisfactory progress toward a degree.

ASSESSMENT AND EXAMINATIONS
Students are required to have a graduate program advisory committee (GPAC) meeting once each year to monitor progress toward their degree.

Doctoral students are required to take a preliminary/oral examination after they have cleared their record of all Incomplete and Progress grades (other than research and thesis). Defense and deposit of the doctoral dissertation in the Graduate School is required.

Additional requirements determined by the department:

The preliminary exam cannot be scheduled until 39 residence credits are completed as well as ALL certified coursework except for FOOD SCI 990 Research and 1 credit of graded FOOD SCI 900 Seminar Advanced (student gives a seminar presentation and class is taken for a grade).

TIME CONSTRAINTS
It is expected that students will complete all degree requirements in five years.

Dissertators cannot schedule their dissertation defense sooner than six months after the actual date of passing the preliminary examination.

A candidate for a doctoral degree who fails to take the final oral examination (thesis defense) and deposit the dissertation within five years after passing the preliminary examination may be required to take another preliminary examination to be admitted to candidacy a second time.

Doctoral degree students who have been absent for ten or more consecutive years lose all credits that they have earned before their absence. Individual programs may count the coursework students completed prior to their absence for meeting program requirements; that coursework may not count toward Graduate School credit requirements.

LANGUAGE REQUIREMENTS
Food Science does not have a foreign language requirement.

ADMISSIONS

Students who are admitted to the program must meet the Graduate School minimum requirements, including completion of a bachelor’s degree which typically consists of a satisfactory undergraduate education in fields such as food science, dairy science, chemistry, most biological sciences (e.g., biochemistry, microbiology, nutrition), and engineering (especially chemical and agricultural). To enter either program, students must have taken at least one course in biochemistry and one course in organic chemistry. Students with a master’s degree are eligible to apply for the Ph.D. program. Students without a master’s degree are not eligible to enter the Ph.D. program, and must first apply to the M.S. program.

A decision on eligibility for admission is made by an individual faculty members based on the review of the applicant’s academic record, scores on TOEFL (for international students) and Graduate Record Exams (GRE), letters of reference, supplemental application and personal statement (reasons for graduate study), and available funding/space in research labs. Students interested in applying for the food science program should look closely at the website (http://www.foodsci.wisc.edu/grad_apply.php) for specific information about the admissions process.
LEARNING OUTCOMES

KNOWLEDGE AND SKILLS

KNOWLEDGE

• Articulates potentials and limits of core paradigms in food science; formulates ideas and extrapolations beyond current boundaries of knowledge.
• Develops breadth through competencies in minor field(s) of study.

PROFESSIONAL CONDUCT

• Fosters ethical and professional conduct.

ADDITIONAL LEARNING GOALS

RESEARCH

• Critically evaluates evidence to articulate research questions and develop appropriate research hypotheses.
• Formulates an effective experimental design and develops appropriate methodology to address problems in a systematic manner.
• Creates knowledge that makes a substantive contribution to the field and articulates how society may benefit.
• Professional Skills
• Communicates complex ideas in a succinct and understandable manner to diverse audiences.
• Develops mentoring and teaching skills.

PEOPLE

Faculty: Professors Damodaran, Etzel, Hartel, Ingham, Lucey, Parkin, Rankin (chair), Steele; Assistant Professors Bolling, Ikeda, van Pijkeren