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. The Ph.D. track 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 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 both the 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 and closely allied departments.

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.

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 the program, students must have taken at least one course in biochemistry and one course in organic chemistry.

APPLICATION DEADLINES:

Fall semester—January 15 (prior to the fall semester)
Spring semester—September 1 (prior to the spring semester)

The minimum test scores required to be eligible to be “admissible” to the Food Science graduate program are the following:

<table>
<thead>
<tr>
<th>Test</th>
<th>Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>GRE Verbal</td>
<td>148</td>
</tr>
<tr>
<td>GRE Quantitative</td>
<td>148</td>
</tr>
<tr>
<td>GRE Analytical Writing</td>
<td>3.5</td>
</tr>
</tbody>
</table>

Admissibility does NOT equal admission. Admissibility means applicants have met the minimum requirements to be eligible for admission. Applicants recommended for admission generally have higher test scores that are competitive with the top 50% of GRE scores among individuals intent on pursuing graduate studies in Life Sciences in the U.S. (median scores of V: 151, Q: 151, AW: 3.5). Recommendation for admission is determined solely by the faculty member. Final admission is determined by the Graduate School.

Recommendation for admission is made by an individual food science or affiliated faculty member (https://foodsci.wisc.edu/faculty.php) usually based on the review of the following:

- applicant’s online application (https://grad.wisc.edu/admissions/process)
- academic record (scanned PDF academic transcripts)
- official test scores (sent directly from the testing agency (code: 1846)) of Graduate Record Exams (GRE) (https://www.ets.org) and English proficiency test (non-native English speaking applicants (https://grad.wisc.edu/admissions/requirements) only)
- recommendation letters (three)
- personal statement (reasons for graduate study) up to two pages double-spaced
- CV or resume
- applicant’s particular research interest(s) as indicated in supplemental application
- available funding/space in their research lab

After the application is submitted, applicants should contact faculty (https://foodsci.wisc.edu/faculty.php) members directly (via email) to discuss research opportunities in their 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.

GRADUATE SCHOOL ADMISSIONS

Graduate admissions is a two-step process between academic degree programs and the Graduate School. Applicants must meet requirements of both the program(s) and the Graduate School. Once you have researched the graduate program(s) you are interested in, apply online (https://grad.wisc.edu/admissions).

FUNDING

GRADUATE SCHOOL RESOURCES

Resources to help you afford graduate study might include assistantships, fellowships, traineeships, and financial aid. Further funding information (https://grad.wisc.edu/funding) is available from the Graduate School. Be sure to check with your program for individual policies and processes related to funding.
PROGRAM RESOURCES

We recommend that your application be complete by the application deadlines in order to be considered for funding. Financial assistance is sometimes available to qualified individuals in the form of research assistantships, teaching assistantships, or fellowships. Fellowships are granted to students meeting specific criteria and with outstanding academic records. Research assistantships are awarded by individual professors through funds available to their research programs. Funding is awarded on a competitive basis and renewed annually pending the student's satisfactory progress. (Teaching assistant positions in food science are available only to students who have already been enrolled for at least two semesters.)

Please be advised that you do not need to make a separate application for financial support as your admission application will also serve as an application for assistantships and fellowships.

Prospective students are encouraged to search and apply for external funding sources (scholarships and fellowships) on their own. (If faculty do not have funding or lab space available, they often do not accept new students into their labs.) Additionally, prospective students are encouraged to apply for graduate assistantship (teaching, research, or project) positions in other UW–Madison departments to potentially defray the costs of their studies. See Graduate School Funding pages (https://grad.wisc.edu/studentfunding/steps) for more information.

REQUIREMENTS

MINIMUM GRADUATE SCHOOL REQUIREMENTS

Review the Graduate School minimum academic progress and degree requirements (http://guide.wisc.edu/graduate/policiesandrequirementstext), in addition to the program requirements listed below.

MAJOR REQUIREMENTS

MODE OF INSTRUCTION

<table>
<thead>
<tr>
<th>Face to Face</th>
<th>Evening/Weekend</th>
<th>Online</th>
<th>Hybrid</th>
<th>Accelerated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td></td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

Mode of Instruction Definitions

Evening/Weekend: These programs are offered in an evening and/or weekend format to accommodate working schedules. Enjoy the advantages of on-campus courses and personal connections, while keeping your day job. For more information about the meeting schedule of a specific program, contact the program.

Online: These programs are offered primarily online. Many available online programs can be completed almost entirely online with all online programs offering at least 50 percent or more of the program work online. Some online programs have an on-campus component that is often designed to accommodate working schedules. Take advantage of the convenience of online learning while participating in a rich, interactive learning environment. For more information about the online nature of a specific program, contact the program.

Hybrid: These programs have innovative curricula that combine on-campus and online formats. Most hybrid programs are completed on-campus with a partial or completely online semester. For more information about the hybrid schedule of a specific program, contact the program.

CURRICULAR REQUIREMENTS

<table>
<thead>
<tr>
<th>Minimum Credit Requirement</th>
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</thead>
<tbody>
<tr>
<td>Minimum Residence Credit Requirement</td>
</tr>
<tr>
<td>Overall Graduate GPA Requirement</td>
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</tbody>
</table>

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.

Assessments 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 with the Graduate School is required.

Additional requirements determined by the department:

The preliminary exam cannot be taken until 39 graduate residence credits are completed as well as ALL required 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).

Language Requirements

Food Science does not have a foreign language requirement.

Doctoral Minor/Breadth Requirements

All doctoral students are required to complete a minor. Option A minor: credit requirements are set by the host department where the courses are taken. Option B (distributed) minor: 10 credits are required (courses numbered 500 or above) from more than one department and approved by the student's graduate program advisory committee (GPAC). The Option B (distributed) minor must have a related thread running through their coursework (also called a common theme).

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

Students are expected to have taken one course each in organic chemistry and biochemistry. If they enter the program without these courses, students are required to take them before graduating.

Degree Requirements

Food Science Core Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOOD SCI 410</td>
<td>Food Chemistry</td>
<td></td>
</tr>
<tr>
<td>FOOD SCI 432</td>
<td>Principles of Food Preservation</td>
<td></td>
</tr>
<tr>
<td>FOOD SCI/</td>
<td>Food Microbiology</td>
<td></td>
</tr>
<tr>
<td>MICROBIO 325</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

8 credits of FOOD SCI (600, 610-679, 700-899) or closely related courses (Any graduate level)

Statistics

Students must take a course in statistics if they have not done so prior to entering the program. Typically students will take:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAT/F&amp;W ECOL/</td>
<td>Statistical Methods for Bioscience I</td>
<td></td>
</tr>
<tr>
<td>HORT 571</td>
<td></td>
<td></td>
</tr>
<tr>
<td>or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>STAT/F&amp;W ECOL/</td>
<td>Statistical Methods for Bioscience II</td>
<td></td>
</tr>
<tr>
<td>HORT 572</td>
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</table>

Teaching Experience Requirement

All students are required to take a teaching pedagogy course in addition to either holding a TA position or taking the FOOD SCI 799 practicum course.

<table>
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<tr>
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<th>Title</th>
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</thead>
<tbody>
<tr>
<td>FOOD SCI 799</td>
<td>Practicum in Food Science Teaching</td>
</tr>
</tbody>
</table>

or

A Teaching Assistant (TA) position in any department

Graduate Seminar

Students must enroll in FS 900 every semester they are in the program.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>FOOD SCI 900</td>
<td>Seminar Advanced</td>
</tr>
</tbody>
</table>

Students may take courses with the graduate-level attribute (G50%) in Food Science and related disciplines to meet the 51-credit minimum requirement.

1. If students have taken similar “Food Science Core” courses prior to entering the program, these courses may be waived.

2. Two graded graduate seminars are required (one before the prelim and one before graduation). The semester students present their research, this course is graded. Otherwise, students take it as Satisfactory/Unsatisfactory.

MAJOR-SPECIFIC POLICIES

GRADUATE PROGRAM HANDBOOK

A Graduate Program Handbook containing all of the program’s policies and requirements is forthcoming from the program.

PRIOR COURSEWORK

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.

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.

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.

PROBATION

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. Students can be suspended from the Graduate School if they do not 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. An advisor is a faculty member or affiliate faculty member from the major department responsible for providing advice about the student’s coursework, supervising the student’s research, and acting as a mentor to the student through the student’s graduate career.

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. The Ph.D. GPAC should consist of at least 4 members as detailed in the Food Science Graduate Student Handbook. The Graduate School requires that at least three committee members are designated as readers. Readers are committee members who commit themselves to closely reading, reviewing and approving the entire dissertation before it is deposited with the Graduate School.

POLICIES

GRADUATE SCHOOL POLICIES

The Graduate School’s Academic Policies and Procedures (https://grad.wisc.edu/acadpolicy) provide essential information regarding general university policies. Program authority to set degree policies beyond the minimum required by the Graduate School lies with the degree program faculty. Policies set by the academic degree program can be found below.
CREDITS PER TERM ALLOWED
15 credits

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. (per Graduate School Policy)

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.

OTHER
Students are admitted by faculty in the department through direct admission. Faculty also determine who will receive funding which is dependent upon available funds from grants.

PROFESSIONAL DEVELOPMENT

GRADUATE SCHOOL RESOURCES
Take advantage of the Graduate School’s professional development resources (https://grad.wisc.edu/pd) to build skills, thrive academically, and launch your career.

LEARNING OUTCOMES

1. Articulates potentials and limits of core paradigms in food science; formulates ideas and extrapolations beyond current boundaries of knowledge.

2. Develops breadth through competencies in minor field(s) of study.

3. Fosters ethical and professional conduct.

4. Critically evaluates evidence to articulate research questions and develop appropriate research hypotheses.

5. Formulates an effective experimental design and develops appropriate methodology to address problems in a systematic manner.

6. Creates knowledge that makes a substantive contribution to the field and articulates how society may benefit.

7. Communicates complex ideas in a succinct and understandable manner to diverse audiences.

8. Develops mentoring and teaching skills.

PEOPLE

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