

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 health. 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

Please consult the table below for key information about this degree program's admissions requirements. The program may have more detailed admissions requirements, which can be found below the table or on the program's website. Graduate admissions is a two-step process between academic programs and the Graduate School. **Applicants must meet** the minimum requirements (<https://grad.wisc.edu/apply/requirements/>) **of the Graduate School as well as the program(s)**. Once you have researched the graduate program(s) you are interested in, apply online (<https://grad.wisc.edu/apply/>).

Requirements	Detail
Fall Deadline	January 15
Spring Deadline	September 1
Summer Deadline	This program does not admit in the summer.
GRE (Graduate Record Examinations)	Not required.

English Proficiency Test Every applicant whose native language is not English or whose undergraduate instruction was not in English must provide an English proficiency test score and meet the Graduate School minimum requirements (<https://grad.wisc.edu/apply/requirements/#english-proficiency>).

Other Test(s) (e.g., GMAT, MCAT)	n/a
Letters of Recommendation Required	3

Students who are admitted to the program must meet the Graduate School minimum requirements (<https://grad.wisc.edu/admissions/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 (examples include BIOCHEM 501 or BIOCHEM/NUTR SCI 510) and one course in organic chemistry (examples include CHEM 341, CHEM 343, or CHEM 345).

Requirements Detail

English Proficiency Test	TOEFL: 92 IELTS: 7.0 MELAB: 82 (only one English test needs to be taken)
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Recommendation for admission is determined almost solely by the faculty member food science or affiliated faculty member (<https://foodsci.wisc.edu/faculty.php>). Final admission is determined by the Graduate School.

The recommendation for admission is made 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 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. Some dialogue can be exchanged in advance. However, like virtually all institutions that support graduate studies, one must submit a formal application to UW-Madison before being considered for admission. The Food Science Department cannot take any action regarding admission until the application is complete. We do not pre-screen applications, nor do we provide an

informal assessment of qualifications based on volunteered documents from individuals prior to application.

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.

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 restrictions 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 primarily 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/#policiesandrequirements>), in addition to the program requirements listed below.

MAJOR REQUIREMENTS

MODE OF INSTRUCTION

Face to Face	Evening/ Weekend	Online	Hybrid	Accelerated
Yes	No	No	No	No

Mode of Instruction Definitions

Accelerated: Accelerated programs are offered at a fast pace that condenses the time to completion. Students are able to complete a program with minimal disruptions to careers and other commitments.

Evening/Weekend: Courses meet on the UW–Madison campus only in evenings and/or on weekends to accommodate typical business schedules. Students have the advantages of face-to-face courses with the flexibility to keep work and other life commitments.

Face-to-Face: Courses typically meet during weekdays on the UW-Madison Campus.

Hybrid: These programs combine face-to-face and online learning formats. Contact the program for more specific information.

Online: These programs are offered 100% online. Some programs may require an on-campus orientation or residency experience, but the courses will be facilitated in an online format.

CURRICULAR REQUIREMENTS

Requirements Detail	
Minimum Credit Requirement	51 credits
Minimum Residence Credit Requirement	32 credits
Minimum Graduate Coursework Requirement	Half of degree coursework (26 credits out of 51 total credits) must be completed graduate-level coursework; courses with the Graduate Level Coursework attribute are identified and searchable in the university's Course Guide.
Overall Graduate GPA Requirement	3.00 GPA required.
Other Grade Requirements	No more than 6 credits of C, D, or F grades are allowed during a given graduate program.
Assessments and Examinations	Students are required to have a graduate program advisory committee (GPAC). Within 6 months, the students meet with their GPAC to establish the coursework. Afterwards, students meeting every 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: 9 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

Code	Title	Credits
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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

At least 8 credits of FOOD SCI (610-679, 700-899) or closely related courses (any graduate level)

Graduate Seminar

Upon entry in the program, students must enroll every semester in this course. The student only receives a letter grade when they present their research.

FOOD SCI 900	Seminar Advanced ¹
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Food Science Core Courses

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

FOOD SCI 410	Food Chemistry
FOOD SCI 432	Principles of Food Preservation
FOOD SCI/ MICROBIO 325	Food Microbiology

Statistics

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

STAT/M E 424	Statistical Experimental Design
STAT/F&W ECOL/ HORT 571	Statistical Methods for Bioscience I
STAT/F&W ECOL/ HORT 572	Statistical Methods for Bioscience II

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.

FOOD SCI 799	Practicum in Food Science Teaching
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or

A Teaching Assistant (TA) position in any department

Electives

Students take courses with the graduate attribute at the 600-level and up in Food Science and related disciplines to meet the 51-credit minimum requirement.

<i>Doctoral Minor</i>	9+
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Affiliated Instructional Course or Workshop (Optional)	0-3
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¹ 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.

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.

MAJOR-SPECIFIC POLICIES

PRIOR COURSEWORK

Graduate Work from Other Institutions

Prior graduate-level coursework from other institutions does 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 does 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 does 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. For Ph.D. candidates, the GPAC should consist of at least four members as detailed in the Food Science Graduate Student Handbook. One member must have a tenure home in the Department of Food Science. 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.

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.

GRIEVANCES AND APPEALS

These resources may be helpful in addressing your concerns:

- Bias or Hate Reporting (<https://doso.students.wisc.edu/bias-or-hate-reporting/>)
- Graduate Assistantship Policies and Procedures (<https://hr.wisc.edu/policies/gapp/#grievance-procedure>)
- Hostile and Intimidating Behavior Policies and Procedures (<https://hr.wisc.edu/hib/>)
 - Office of the Provost for Faculty and Staff Affairs (<https://facstaff.provost.wisc.edu/>)
- Dean of Students Office (<https://doso.students.wisc.edu/>) (for all students to seek grievance assistance and support)
- Employee Assistance (<http://www.eao.wisc.edu/>) (for personal counseling and workplace consultation around communication and conflict involving graduate assistants and other employees, post-doctoral students, faculty and staff)
- Employee Disability Resource Office (<https://employeedisabilities.wisc.edu/>) (for qualified employees or applicants with disabilities to have equal employment opportunities)
- Graduate School (<https://grad.wisc.edu/>) (for informal advice at any level of review and for official appeals of program/departmental or school/college grievance decisions)
- Office of Compliance (<https://compliance.wisc.edu/>) (for class harassment and discrimination, including sexual harassment and sexual violence)

- Office of Student Conduct and Community Standards (<https://conduct.students.wisc.edu/>) (for conflicts involving students)
- Ombuds Office for Faculty and Staff (<http://www.ombuds.wisc.edu/>) (for employed graduate students and post-docs, as well as faculty and staff)
- Title IX (<https://compliance.wisc.edu/titleix/>) (for concerns about discrimination)

College of Agricultural and Life Sciences: Grievance Policy

In the College of Agricultural and Life Sciences (CALs), any student who feels unfairly treated by a member of the CALs faculty or staff has the right to complain about the treatment and to receive a prompt hearing. Some complaints may arise from misunderstandings or communication breakdowns and be easily resolved; others may require formal action. Complaints may concern any matter of perceived unfairness.

To ensure a prompt and fair hearing of any complaint, and to protect the rights of both the person complaining and the person at whom the complaint is directed, the following procedures are used in the College of Agricultural and Life Sciences. Any student, undergraduate or graduate, may use these procedures, except employees whose complaints are covered under other campus policies.

1. The student should first talk with the person at whom the complaint is directed. Most issues can be settled at this level. Others may be resolved by established departmental procedures.
2. If the student is unsatisfied, and the complaint involves any unit outside CALs, the student should seek the advice of the dean or director of that unit to determine how to proceed.
 - a. If the complaint involves an academic department in CALs the student should proceed in accordance with item 3 below.
 - b. If the grievance involves a unit in CALs that is not an academic department, the student should proceed in accordance with item 4 below.
3. The student should contact the department's grievance advisor within 120 calendar days of the alleged unfair treatment. The departmental administrator can provide this person's name. The grievance advisor will attempt to resolve the problem informally within 10 working days of receiving the complaint, in discussions with the student and the person at whom the complaint is directed.
 - a. If informal mediation fails, the student can submit the grievance in writing to the grievance advisor within 10 working days of the date the student is informed of the failure of the mediation attempt by the grievance advisor. The grievance advisor will provide a copy to the person at whom the grievance is directed.
 - b. The grievance advisor will refer the complaint to a department committee that will obtain a written response from the person at whom the complaint is directed, providing a copy to the student. Either party may request a hearing before the committee. The grievance advisor will provide both parties a written decision within 20 working days from the date of receipt of the written complaint.
 - c. If the grievance involves the department chairperson, the grievance advisor or a member of the grievance committee, these persons may not participate in the review.
 - d. If not satisfied with departmental action, either party has 10 working days from the date of notification of the departmental committee action to file a written appeal to the CALs Equity and Diversity Committee. A subcommittee of this committee will make a preliminary judgement as to whether the case

merits further investigation and review. If the subcommittee unanimously determines that the case does not merit further investigation and review, its decision is final. If one or more members of the subcommittee determine that the case does merit further investigation and review, the subcommittee will investigate and seek to resolve the dispute through mediation. If this mediation attempt fails, the subcommittee will bring the case to the full committee. The committee may seek additional information from the parties or hold a hearing. The committee will present a written recommendation to the dean who will provide a final decision within 20 working days of receipt of the committee recommendation.

Assistant Professors: Bolling, Girard, Huynh, Ujor, van Pijkeren

4. If the alleged unfair treatment occurs in a CALS unit that is not an academic department, the student should, within 120 calendar days of the alleged incident, take his/her grievance directly to the Associate Dean of Academic Affairs. The dean will attempt to resolve the problem informally within 10 working days of receiving the complaint. If this mediation attempt does not succeed the student may file a written complaint with the dean who will refer it to the CALS Equity and Diversity Committee. The committee will seek a written response from the person at whom the complaint is directed, subsequently following other steps delineated in item 3d above.

OTHER

Students are admitted by faculty in the department through direct admission.

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: Hartel, Ingham, Lucey, Rankin (chair)