**CEREAL SCIENCE GRADUATE PROGRAM**

**Mission Statement**
To train and educate students in the discipline of cereal/grain science through research, teaching and service.

**Statement of expectations** for our graduated M.S. and Ph.D. students

**M.S. graduate** should have the knowledge and comprehension of the composition, functionality and utilization of cereals that will allow them to solve and analyze challenges within their field of employment.

**Ph.D. graduate** should possess the competencies of a M.S. graduate and should further be able to analyze, synthesize, and evaluate cereal based systems to meet the demands of their field of employment.

**NOTE 1:** To fully understand the above statement of expectations, please refer to Bloom’s Taxonomy of learning

**NOTE 2:** Grain is used instead of cereal to reflect the diversity of plant crops researched by faculty.

**Organization of the Cereal Science Graduate Program**
Cereal Science is a Graduate program in the College of Agriculture Food Systems and Natural Resources and is administered by the Department of Plant Sciences.

**HISTORY:** July 1990; Amended February 1993; June 1996; March 1998; October 2004; August 2010; August 2015; June 2016; March 2018.
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PART I ADMISSION of GRADUATE STUDENTS

Graduate School.
Please refer to Graduate School webpage for requirements needed for admission into Graduate School. [http://www.ndsu.edu/gradschool/]
Admission to the Graduate School is open to qualified graduates of universities and colleges of recognized standing without regard to color, race, sex, religion, national origin, or disability. Admission to the Graduate School is a selective process intended to identify those applicants who are outstanding among recipients of baccalaureate degrees.

A student will be permitted to register in the Graduate School only after formal admission. Departments or programs make recommendations on all applications, but final admission is the responsibility of the Dean of the Graduate School.

Cereal Science Graduate Program.
The Cereal Science Graduate Program is open to all qualified graduates of universities and colleges of recognized standing. To be admitted with full standing status to the program, the applicant must:
1. Be admitted into the Graduate School.
2. Hold a baccalaureate degree from an educational institution of recognized standing.
3. Have adequate preparation in chemistry and the biological sciences and must show potential to undertake advance study and research as evidenced by academic performance and experience.
4. At the baccalaureate level, must have earned a cumulative grade point average of at least 3.0 on a 4 point scale or equivalent.

Students who do not meet all requirements for admission or have deficiencies in prerequisite coursework but show strong potential for graduate study may be admitted conditionally. Dependent upon the student's academic performance after the first or second semester of study the conditional status may be changed to full graduate standing.

Applications will be considered at any time they are submitted. Preferably, applications should be submitted directly to the graduate school before May 1 for a Fall semester start and before October 1 for a Spring semester start. Official transcripts (transcripts having an appropriate seal or stamp) of all previous undergraduate and graduate records must be submitted with the application. When a transcript is submitted in advance of completion of their undergraduate or graduate studies, an updated transcript showing all course credits and grades must be provided in advance of the initial registration at NDSU.

International Students.
The Cereal Science Graduate program English Language Test Score Requirement for international applicants consists of a minimum TOEFL paper based score of 525, internet based score of 71, IELTS score of 6.0 or PTE Academic score of 50.
For more information, please refer to the following webpage. [http://www.ndsu.edu/gradschool/prospective_students/international_applicants/english_language_s_core_requirements/]
Compliance with all visa regulations is the responsibility of the foreign student and their spouse. If there are any questions regarding this matter please contact the International Program located in Memorial Union room 116. Their telephone number is (701) 231-7895.

International Programs website contains information on travel in the US, housing, Health Insurance, and how to prepare to arrive on campus. http://www.ndsu.edu/international/resources_for_new_graduate_students/

**Cereal Science - Accelerated Master of Science program**

**Eligibility and Admission:**

An online submission to the Graduate School is required. Students interested in the accelerated M.S. degree should consider submitting the application during their junior year or just before their senior year. For eligibility and admission please see information below.

*At the time of application, the student:*

1. Must be enrolled in Food Science B.S. program at NDSU.
2. Must have completed at least **60 credits** towards their B.S. degree before conditional admission.
3. Must have completed at least **30 credits** at NDSU before conditional admission.
4. Must have a cumulative **GPA of 3.5** at NDSU to be eligible for conditional admission.
5. Must have completed an introductory food science course (CFS 200 or CFS 210), introductory food processing (CFS 370), MATH 146 or higher, and general chemistry (CHEM 121, 122).
6. Must have completed or is concurrently taking microbiology (MICR 350), organic chemistry (CHEM 341), and biochemistry (BIOC 460). MICR 202, CHEM 240, and CHEM 260 courses, respectively, cannot serve as substitutes for the aforementioned courses.
PART II GENERAL INFORMATION

Before or Upon Arriving at NDSU.
1. The new graduate student should maintain communication with their academic/research advisor before arrival on campus.
2. International students should refer to the International Program website before arriving on campus and should contact the Director of International Support Services immediately upon arrival on campus. http://www.ndsu.edu/international/
3. New graduate students will receive an orientation from graduate students already in the program (see Part VI).

Housing.
Students may live in on-campus housing or in private off-campus housing. On campus residence halls and apartments provide comfortable and wholesome living experiences that will enhance the student's personal development.

Contracts for residence hall accommodations are for the academic year. Requests for release at the end of the semester are reviewed quarterly. Procedures are specified in the General Conditions of Contract for Residence Halls.

Applications and contracts for residence hall accommodations may be procured from and are returned to the Resident Housing office with the appropriate deposit fee. Additional information regarding food and housing facilities may also be obtained by referring to the Department of Residence Life website: http://www.ndsu.edu/reslife/

Graduate students living in university operated housing, whose registered hours are less than the minimum required to retain housing, may use a convenient procedure to establish their eligibility. In such cases, it is a requirement that the graduate students are to complete and sign the appropriate form available at the Graduate School office (Putnam Hall 106). This form, certified by the major advisor, substantiates that the graduate student's non-registered academic workload is equal to the minimum registered hours required to retain housing.

Transportation.
Refer to Parking and Transportation website: http://www.ndsu.edu/parking/ for information concerning parking cars and transportation.

NDSU/MAT Bus.
NDSU students can ride any MAT bus free of charge. Simply show a current NDSU student ID card when boarding.
The bus stops near NDSU on a specific schedule with various stops before the final one at the downtown station. To go to West Acres Shopping Center, you will need to transfer to another bus downtown. For more information regarding scheduled times and stops for the various numbered buses, check the bus schedule or call: Metropolitan Area Transit (MAT bus) 232-7500; or refer to webpage http://www.ndsu.edu/parking/

Personal Car.
PARKING CARS. A permit is required for student parking and graduate students are required to use student lots. Please consult the Campus Parking Office at the Thorson Maintenance Center for more details.
CAR LICENSE. North Dakota license is usually required within five days after arrival into the
state. Call the State Highway Patrol (Motor Vehicle Department) regarding your situation. The telephone number is 282-5070.

**DRIVER’S LICENSE.** All drivers must have state, international, or other valid driver's license. The telephone number is 239-8940.

**CAR INSURANCE.** Insurance coverage is required by the state of North Dakota. Everyone must have liability coverage and foreign students should secure a Driver's License and liability insurance before driving.

**Vacation/Sick Days.**
According to the ND State Board of Higher Education Policy, graduate assistants are not entitled to annual leave (vacation).
The Cereal Science Graduate program provides unofficial personal time to all graduate assistants in the amount of 8 hours per month during the first 24 months of residence in the program. This time can be used for sickness or personal reasons. This time must be recorded using the blue Notification of Employee Leave form. A file will be maintained in the office of the Department of Plant Sciences to record all personal time used by graduate students. Any additional time away from the North Dakota State University will be taken **without** pay. Upon completion of a student's degree, unused personal time will not merit any monetary value.

**Health Service.**
The Wellness Center provides students with readily accessible health care which enables them, through good health, to take full advantage of their academic opportunities. The following services are available: medical consultation and diagnosis, routine laboratory tests, referral for X-ray or extensive testing, first aid, treatment for illness and minor accidents, prescription service, preventative medicine and referral to specialists. The Wellness Center telephone number for Student Health Services is 231-7331; webpage: [http://www.ndsu.edu/studenthealthservice/](http://www.ndsu.edu/studenthealthservice/)

**Health Insurance**
All students (international and domestic) are required to have health insurance. For details see the following webpage. [http://www.ndsu.edu/studenthealthservice/insurance/](http://www.ndsu.edu/studenthealthservice/insurance/)
Contact the Student Affairs Division Office for more information on health insurance. The telephone number is 231-7701.

**Banking.**
Graduate assistants may consider belonging to the Northland Educators Federal Credit Union located at 1404 12th Av. N. (south of the Main Library). US Bank has an office in the Memorial Union. Other banks off campus are also available.
The Financial Aid Office located in Ceres Hall room 202 has short-term loan facilities also. Their telephone number is 231-7533.

**Smoking.**
“Smoking is prohibited on the North Dakota State University grounds and in University buildings, residence halls, apartments and enclosed structures.” See NDSU policy 153.
[http://www.ndsu.edu/hr/news/detail/9114/](http://www.ndsu.edu/hr/news/detail/9114/)

**Keys.**
Keys associated with Harris Hall are obtained from the Department of Plant Sciences. Students working in other buildings will obtain keys from the appropriate department office. Consult with your
advisor. Keys for desks that have locks are also issued to the student on assignment of office area. Student offices, study rooms, and research laboratories are available to graduate students 24 hours a day, seven days a week. Students should not work alone in research laboratories after office hours – use the buddy system. If you invite other students into the building, you are responsible for their conduct while here. After office hours, doors to the buildings are locked and are not to be left ajar or propped open for friends and others to enter. All keys must be returned when the student leaves the Cereal Science Graduate program.

Office assignment.
Each graduate student will be assigned a desk and chair in an office in Harris Hall or in a building where they work (eg Quentin Burdick Building, Pilot plant). The desk or office may not be changed without checking with your advisor.

Computer.
The Quentin Burdick Building (QBB) and several computer clusters on campus provide computers, printers, and software at different locations around campus. These computer clusters are open to all students. Information concerning computer cluster availability and workshop offerings can be obtained by contacting Information Technology Services (ITS) at 231-8685 or www.ndsu.nodak.edu/helpdesk

E-mail.
NDSU email accounts can be obtained online through ITS www.ndsu.nodak.edu/helpdesk. Each student should obtain an NDSU e-mail address as soon as they arrive. This address the official form of communication with you by the Program and the University.

Mail.
Each student will be provided a mail box in Harris Hall, room 113 Harris Hall.

Address for mail delivered by US Postal Service
NDsu Dept 7640
PO Box 6050
Fargo, ND 58108-6050

Address for parcels shipped via carrier (FedEx, UPS) – delivery to Harris Hall
1250 Bolley Drive
Harris Hall 111
North Dakota State University
Fargo, ND 58102

Photocopying.
Photocopier use must be approved by your major advisor, and should be directly related to your research. Do not photocopy long scientific papers that could be obtained as reprints from the department or author by advanced planning. Photocopies should be made only if absolutely necessary.

Photocopying for personal use, including material related to classes, should be done at the student’s expense. Coin/Bison Card operated copiers are located in the Main Library. The Copy Shop in the Memorial Union is also available for all students.
**Secretarial service.**
No secretarial service is provided to graduate students.

**Supplies.**
Notebooks, photocopying, writing utensils, and other materials required for course work are personal expenses. Consult with your Major Advisor on how to obtain/purchase laboratory supplies for research.

**Professional Memberships/National Meetings.**
Graduate students are strongly urged to join the professional society of most interest to them, e.g., AACC International (AACC) formerly known as American Association of Cereal Chemists, Institute of Food Technologists (IFT), American Chemical Society (ACS), etc.

There are many advantages to becoming a member of a professional society. One great benefit is job announcements associated with the professional society. Most scientific societies have student sections. Students are strongly encouraged to assume leadership positions in these sections. These opportunities are important in developing a network that will be helpful your entire career.

Applications are available for student membership in AACC and IFT. Also, students may join the local sections of AACC (Northwest Section) and IFT (Minnesota Section). All costs associated with becoming a member of a professional association will be paid by the student. Student discounts are available from these organizations. Travel grants for attending meetings are also available.

Students in the Cereal Science Graduate Program are welcome to join the NDSU Food Science/Food Safety Club. Students can join other organizations active at NDSU.

**Travel Regulations.**
Travel is dependent upon approval of NDSU administration. Consult with your Major Advisor before requesting travel. Ask your advisor what percentage of expenses or what expenses will be covered by your travel.

**In-State Travel**
- A travel expense voucher is completed after returning from the trip and turned in to the appropriate office at the end of each month you travel
- Receipts are required for lodging and most other special items except food.

**Out-of-State Travel**
- Travel request must be requested at least two weeks prior to departure. The travel request is essential for off-campus coverage by Workmen's Compensation.
- Obtain a travel request form from Loftsgard Hall or Human Resources website [https://www.ndsu.edu/forms/#human9](https://www.ndsu.edu/forms/#human9)
- Complete and email a copy to advisor and Accounting Specialist, Loftsgard Hall.

**International Travel**
- International travel involving expense must be requested at least one month prior to departure.
- The travel request is essential for off-campus coverage by Workmen's Compensation.
- Obtain a travel request form from Starr Thies, Loftsgard Hall, or Human Resources website [https://www.ndsu.edu/forms/#human9](https://www.ndsu.edu/forms/#human9)
- Complete and email a copy to your advisor and to Accounting Specialist, Loftsgard Hall.
• Approval email from College of Ag (Janelle Quam) is needed BEFORE purchasing airfare, registration, hotel, etc.

Your advisor and the office staff will help with travel procedures. There is a maximum in state and out-of-state per diem for meals and lodging. Reimbursement is made by check about two weeks after the travel voucher is submitted.

Travel Awards.
The Cereal Science Graduate Program encourages all students to attend professional meetings to make presentations of their scientific or academic work. Attendance at these meetings is with the approval of your advisor. The number of meetings a student can attend each year is limited by time, money, workload, and the advisor's consent.

There are sources of funding which can be applied for in order to obtain funds to attend these types of meetings. One of these sources is a travel award offered through the Cereal Science Graduate Program. Each graduate student is eligible to be awarded one travel award per year (limit 2 for M.S. students and 3 for Ph.D. students during tenure in the program). A travel scholarship form is needed, see Appendix 2. This form is available from Cereal Science Graduate Program Coordinator.

After the student completes the form, it must be signed by advisor, chair of the Scholarship/Travel Awards Committee, and coordinator of the Cereal Science Graduate Program. Forward the completed form to the Graduate Student Admin Secretary. This form must be submitted to the chair of the Scholarship/Travel Awards Committee no later than three weeks before travel in order to receive payment.

The amount of the awards will be determined each spring by the Scholarship/Travel Awards Committee of the Cereal Science Graduate Program. Higher amounts will be awarded to students who are presenting their research in the form of oral or poster presentations. Students are encouraged to find matching funds through scholarships offered through various programs sponsored by scientific societies. AACCI and IFT have special programs for travel aid for graduate students.
PART III POLICIES AND EXPECTATIONS

Introduction.
This section explains some of the major policies and expectations for graduate students in the Cereal Science Graduate Program, Department of Plant Sciences, College of Agriculture, Food Systems, and Natural Resources at NDSU. Students are responsible to accomplish at least minimum criteria below. Students are advised to consult both the Graduate Bulletin and the Cereal Science graduate student handbook for additional information. Students should also obtain a copy of NDSU Graduate School Guidelines for the Preparation of Disquisitions: http://www.ndsu.edu/gradschool/graduating_students/dtp/

The start date of a student's matriculation in the Cereal Science Graduate Program will be determined in the following manner:
- the date a student enters their first class as a graduate student in the Cereal Science Graduate Program, or
- the date they start receiving a stipend or other scholarship support.

These two events may or may not occur on the same date. The date which occurs first will be the start date. Start date or first day referred to in this document and future department documents and policies is the starting point for all chronological events and requirements.

New students should report to the Graduate Student Secretary (currently Shannon Ueker) in the Department of Plant Sciences, Loftsgard Hall on their first day to:
- Check on the key order for the buildings they'll need to access
- Have a photo taken
- Drop off the forms from HR that will allow for stipend payment to begin (if applicable)
- Receive information on maintaining their personal graduate student records in the main office of the Department of Plant Sciences

Contract for Graduate Research Assistants and Graduate Teaching Assistants.
All new Graduate Assistants and any Graduate Assistant that has a change in compensation, duties, hours, or other significant aspect of their assistantship must sign a contract (Appendix 4). The contract provides a written agreement that clearly outlines expectations of responsibilities, establishes evaluation procedures, and makes explicit the compensation GAs will receive for their work. Contract templates are department specific and can be obtained by contacting the Graduate Student Secretary or Assistant to the Department Chair.

The contract should accompany the hiring form as it is routed to the Graduate School. If there is a change in the terms of the contract during the specified length of the contract, an addendum to the contract should accompany the 101 form as it is routed to the Graduate School. Changes that require an addendum include a change in hours, a change in compensation, or a change in duties. All graduate students receiving a Graduate Research Assistantship or a Graduate Teaching Assistantship must sign a contract (Appendix 4).

Selection of Advisor.
In general the advisor is determined at the time of acceptance into the Cereal Science Graduate program. Prospective students are selected by faculty having funding for a Graduate Research Assistantship (GRA). The faculty member with the GRA will be the major advisor.
Financial Support.
The most likely source of stipend support is through the student's advisor's research funds or the Cereal Science Graduate Program. Alternative support, equivalent to a full-time assistantship, may also be provided to a student by a sponsor such as a private company, university, or government.

All graduate students must be able to qualify for a tuition waiver. To be eligible for a tuition waiver, the assistantship must be at least half time (10 hours/week) or 160 hours per semester. Financial sponsors who sponsor a student must pay tuition costs.

Funding Policy.
A student in most cases will be awarded a full-time assistantship stipend (20 hours of work/week or 320 hours/semester). Under certain circumstances, a one half-time (10 hours of work/week or 160 hours/semester) assistantship, provided by an advisor or the Cereal Science Graduate Program, may be requested and approved by the Cereal Science Graduate Program committee. (This committee consists of active Cereal Science faculty.) Decisions are based on majority vote.

The suggested minimum annual stipends for M.S. and Ph.D. students in the Cereal Science Graduate program are $13,000 and $14,000, respectively, for a full-time assistantship. Assistantship stipends may be increased as the student progresses through their program after achieving milestones such as proposal defense, preliminary exam completion, etc., and can vary depending on advisor and on availability of funding. Any decrease in stipend funding below the minimum level must be approved by the Cereal Science Graduate Program committee. Any change in stipend requires signing a new GRA/GTA contract.

Other funding opportunities include fellowships and scholarships. Students are encouraged to apply for these opportunities as they become available. Full-time and one-half assistantships qualify for tuition waivers. According to university policy, tuition waivers cover tuition for graduate courses which are completed for a grade. A graduate student taking an undergraduate course or auditing either an undergraduate or graduate course will be responsible for the tuition of that course. Students are expected to pay for course fees.

Funding for graduate students should not exceed the following time limits:
M.S. student: 2 years and 6 months
  • Funding beyond 30 months must be requested and approved by the student's advisor.
Ph.D. student starting with M.S. degree: 3 years and 6 months
  • Funding beyond 42 months must be requested and approved by the student's advisor.
Ph.D. Student starting with B.S. degree: 5 years
  • Funding beyond 60 months must be requested and approved by the student's advisor.

Assistantship Expectations.
According to the Graduate School, “students must be registered for credit each semester they receive an assistantship. Students must dedicate the required number of hours to assigned work each week. Supervisors must also remain sensitive to the academic demands faced by graduate students. In addition, international students must maintain the appropriate residency status.” See Graduate School webpage. https://bulletin.ndsu.edu/graduate/graduate-school-policies/graduate-assistantship-policy/

A student on a Graduate Research Assistantship is expected to be on campus every working day except those on approved annual leave, holidays, or weekends. A full-time and one-half-time
assistantship (both Graduate Research Assistantships and Graduate Teaching Assistantships) requires an average of 20 and 10 hours of assigned work per week, respectively.

A student on a Graduate Teaching Assistantship whose native language is not English needs to demonstrate English proficiency (refer to Graduate School Bulletin section titled "English Language Proficiency Procedure for Graduate Teaching Assistants").

https://bulletin.ndsu.edu/graduate/graduate-school-policies/english-language-proficiency-procedure/

A student, denied an assistantship due to inadequate performance during the course of their studies, will be considered for dismissal from the Program. The chair of the Department of Plant Sciences has the right to withhold a student's stipend for failure to abide by Program polices and regulations. This withholding of a student's stipend can lead to dismissal proceedings.

Student Progress Evaluation.
Student progress will be evaluated at least twice a year, July and January. (See Appendix 3 for evaluation forms.) Evaluation will include the Major advisor and Student. It might be advisable to have one evaluation with supervisory committee. Evaluations will be placed in the student's file stored in the Department of Plant Sciences.

Scholarships.
Graduate students are encouraged to apply for scholarships made available through professional organizations such as AACCI and IFT.
The following scholarships are available through the Cereal Science Graduate Program:
• Len Sibbit
• Rohr Malting/Brewing
• Roman Meal milling
• Frank Bain
• Schwann’s Food

Information is available from the chair of the Scholarship/Travel Awards committee of Cereal Science Graduate Program. These scholarship applications are generally due Spring semester. On occasion, information on the availability of special scholarships is made available by the department chairperson. As well, the Graduate School has a list of scholarships and fellowships available to graduate students.

https://www.ndsu.edu/fileadmin/gradschool.ndsu.edu/Graduate_Fair_presentations/Funding_Opportunities_for_Graduate_Students.pdf

Graduate Supervisory Committee.
Student and advisor will work together to form a supervisory committee within four months of their first day. The supervisory committee will have an important impact on the graduate student’s experience as the committee is involved in plan of study, approval of thesis/dissertation proposal, advising in research and professional development topics, preliminary examination for Ph.D. students, and thesis/dissertation defense. The student is encouraged to visit with their supervisory committee members at least annually.

The M.S. supervisory committee will have at least three members. The members consist of:
• The major advisor
• A second member, who must be a full or associate member of the graduate faculty.
A third member, who could be either a faculty member from outside the student's program or a qualified off-campus expert in the field. If this committee member is not a full or associate member of the graduate faculty, the approval of the Dean of the Graduate College is required. Approval by the dean requires a recommendation from the program administrator accompanied by rationale and a curriculum vitae.

The Ph.D. supervisory committee will have at least four members. The members consist of:

- The major advisor
- A second member, who must be a full or associate member of the graduate faculty.
- A third member, who could be either a faculty member or a qualified off-campus expert in the field. If this committee member is not a full or associate member of the graduate faculty, the approval of the Dean of the Graduate College is required. Approval by the dean requires a recommendation from the program administrator accompanied by rationale and a curriculum vitae.
- A fourth member, the Graduate School Representative (GSR), is chosen by the student, in consultation with the committee chair, at the time of the supervisory committee formation.

Any changes to the supervisory committee must be approved by the Graduate School. A Request to Change Supervisory Committee form must be completed, signed, and submitted to the Graduate School for approval.

Plan of Study.

**M.S. students**, with input from their major advisor and supervisory committee, must have a plan of academic study reviewed and accepted no later than **four months** after their first day. **Ph.D. students** must complete this requirement within **six months**.

The Plan of Study is a list of courses to be taken by the student during their graduate studies. These courses include those required to meet the minimum course requirements for M.S. and Ph.D. degrees in Cereal Science Graduate Program. (See Part V for minimum course requirements.) The signed Plan of Study is submitted to the coordinator of the Cereal Science Graduate Program for approval and then to Graduate Student Secretary (currently Shannon Ueker) for submission to the Graduate Dean.

Any changes to the Plan of Study must be approved by the Graduate School. A Request to Change Plan of Study form must be completed, signed, and submitted to the Graduate School for approval. Consult the Graduate School for more information: [https://bulletin.ndsu.edu/graduate/policies/](https://bulletin.ndsu.edu/graduate/policies/)

Research Proposal and Proposal Meeting.

M.S. students must present and defend their initial thesis research proposal to their supervisory committee no later than six months after their first day. Ph.D. students must complete this requirement within 9 months. This requirement does not preclude the student submitting a revised or new research proposal at a later date.

**Research Proposals - Words of Advice**

- Start early
- Submit proposal on time, as indicated above
- Work with your advisor closely and if he or she asks you to revise it multiple times, do so.
• Trust your advisor. You want to present the best proposal to your committee.

The graduate student, after discussions with their major advisor and selection of a research topic, will write a complete first draft of their thesis proposal and hand one copy to their major advisor. The major advisor and the student will work together to edit the draft proposal until they agree on a final draft that is to be handed to the graduate student's supervisory committee. A proposal defense meeting is scheduled and held.

After the corrections are made to the full committee's satisfaction, the committee signs the proposal meeting report. This report should be delivered to the Graduate Student Secretary (currently Shannon Ueker).

A hard copy of the finalized proposal is given to all committee members. An electronic copy is emailed to the Graduate Student Secretary to be placed in the student's personal file.

Format for Thesis/Dissertation Research Proposals
For both M.S. and Ph.D. students there are accepted formats or organizational styles for presenting a research proposal. Proposals will be double spaced, with 1 inch margins, and Arial 11 pt. or Times Roman 12 pt. or similar font type and size. Student and advisor will select a journal for heading and citation format.

Doctoral Teaching Experience requirement for Ph.D. students
All Ph.D. students are required to have a teaching experience for at least one semester. Ph.D. students with academic aspirations are encouraged to do more teaching activities. The student will enroll in CFS 892: Doctoral Teaching Experience (2 credits). The teaching experience requirement does not involve a Graduate Teaching Assistantship. This experience is an academic experience that is documented through enrollment in CFS 892.

Objective.
Whether employed by industry or academia, a position requiring a Ph.D. often involves some type of teaching activities. The objective of the teaching requirement is to provide a teaching experience to our students.

Content.
Teaching experience could include: preparation and delivery of lectures and preparation and grading of quizzes and examinations; preparation and delivery of laboratory exercises; and evaluation of laboratory reports.

The Experience.
Before enrolling in CFS 892: Doctoral Teaching Experience, the prospective student and instructor of the course will agree on whether or not the experience would involve lecture or laboratory course instruction.

Evaluation.
Towards the end of the semester, the student will be asked to write a description of their experiences (what they learned about teaching) as a teaching assistant (TA). The course instructor will be contacted by the coordinator of the Cereal Science Program about their evaluation of the student. The grade is assigned by the coordinator.

M.S. students are not required to have a teaching experience, but are not prohibited from having a teaching experience (CFS 792: Master’s Teaching Experience).
A student on a Graduate Research Assistantship whose native language is not English must demonstrate English proficiency to the instructor of the course they wish to teach, as well as to the Program Coordinator, before being allowed to register for CFS 792 or 892.

**College Teaching Certificate:** [https://bulletin.ndsu.edu/graduate/programs/collegeteaching/](https://bulletin.ndsu.edu/graduate/programs/collegeteaching/)

**Ph.D. Written and Oral Comprehensive Preliminary Examination**

A comprehensive/preliminary examination will be required of each student after the greater portion of courses has been completed and any required language proficiency has been certified. This examination consists of a written part and an oral part. After passing the comprehensive/preliminary examination, the student will be formally admitted to candidacy for the Doctor of Philosophy degree. At least one academic semester must elapse between the comprehensive/preliminary examination and the final examination.

Graduate School policy: [http://bulletin.ndsu.edu/graduate/graduate-school-policies/doctoral-degree-policies/#dissertationtext](http://bulletin.ndsu.edu/graduate/graduate-school-policies/doctoral-degree-policies/#dissertationtext)

Only Ph.D. students take the comprehensive preliminary examination. The primary purpose of the comprehensive examination is to assess student progress, identify gaps in knowledge/skills within core curriculum areas, provide an opportunity for the student to remedy identified deficiencies in knowledge/skills within core curriculum areas, and upon passing the examination, promote the graduate student to Ph.D. candidacy. See **Appendix 1** for more information on core curriculum areas.

Currently, there are 2 formats for the comprehensive examination: Conventional written/oral examination or Research proposal/oral examination. Regardless of format, this examination should be taken shortly after the fourth semester (between 24-28 months from their starting date) of graduate study. Only students in good academic standing with the Graduate School can take the examination.

**Format One: Conventional written/oral comprehensive examination**

The written and oral examinations are considered two parts of one examination. This exam is given twice a year, approximately on March 15-16 and October 15-16.

The written/oral examination format covers six core curriculum areas:

- cereal and food chemistry
- grain composition
- grain processing technology
- functionality and analysis of chemical components in grain
- experimental design/data interpretation
- communication

**Written portion.**

The written comprehensive exam will be administered by the program coordinator or their appointee. Questions will be solicited by the program coordinator from faculty involved in the Cereal Science Graduate Program. The exam consists of eight questions. Exam questions will be assembled by faculty the Wednesday before the scheduled exam date.

The eight questions are not necessarily course specific but are core area oriented and can encompass more than one core area. The questions will be capstone in nature and test basic
fundamental concepts relevant to Cereal and Food Sciences and the student’s ability to integrate knowledge to solve problems in their discipline.

Questions will be designated as closed book or open book by the submitting faculty member.
- Open book means that the student can access any source of written information, such as books, notes, and lecture notes. Use of internet or telephone is NOT allowed unless specifically mentioned in the question.
- Closed book means that the student has no access to any written notes, books, internet, or library resources. Closed book questions must be turned in before receiving open book questions.

The exam occurs over 2 consecutive days. Each day is from 8:00 am to 5:00 pm with appropriate breaks. Each student will answer 4 questions each day. The order of the questions is at the discretion of the program coordinator.

The student will be provided space for the examination.

The student may consult with the author of the question and or program coordinator in the event that the author of the question is not available to clarify question(s). Questions may not be discussed with anyone else until after the examination.

Individual questions will be graded on a numeric scale of 0-100 points, and will be identified as ‘pass’ or ‘fail’ by the grading faculty. The student will receive the graded answers and is encouraged to do further study in core areas that are identified as deficient before taking the oral examination. For failed questions, the student must visit with the grading faculty after which the student will be given a revised question or remedial activity. Before the oral examination, a copy of the exam, answers, and grader’s comments will be available to the supervisory committee members.

All copies of the exam, answers and grader’s comments must be returned to the program coordinator.

**Oral portion.**
The oral examination will be administered within two to four weeks after the written examination is graded. Scheduling of the oral examination will be at convenience of the student, advisor, and committee members. As stated in the Graduated School webpage [https://bulletin.ndsu.edu/graduate/graduate-school-policies/doctoral-degree-policies/#dissertationtext), ‘Permission to schedule the examination must be requested of the Graduate School by the student’s major advisor using the Request to Schedule Examination form. The request to schedule must be received by the Graduate School at least two (2) weeks prior to the examination. The notification by the Graduate School will confirm this scheduled examination.’

The oral examination will cover the 6 core curriculum areas with special emphasis on those areas identified as deficient by the written examination. At the end of the oral examination, the student’s committee will deliberate and decide whether the student ‘passed’ or ‘failed’ the comprehensive examination. The student will be informed at that time.
Failed examination.

‘A negative vote by more than one member of the student's committee will signify failure of the comprehensive/preliminary examination. Upon permission of a majority of the supervisory committee members, a candidate is allowed to retake the oral examination. The supervisory committee will set a date at least one month after the failed examination. Exception to this time limit will be considered by the Dean of the Graduate School upon presentation of written justification from the chair of the supervisory committee in consultation with the committee members.

Should both attempts to pass an examination result in failure, the candidate may request to take the examination a third time. A request for a third examination requires the support of the supervisory committee and program coordinator, and the approval of the Dean of the Graduate School after consultation with the Graduate Council.’ – Graduate School policy

The second examination will only involve the Oral examination and will cover the 6 core curriculum areas with special emphasis on those areas identified as deficient by the first attempt at the Written/Oral examination.

Format Two: Research proposal examination.

Written portion.

The objective of this examination is to evaluate the student’s ability to follow instructions, to identify and define a problem, and to formulate and articulate a research plan, appropriate experimental design, and project budget.

The student, advisor, and advisory committee will agree upon the granting agency guidelines and on the proposal topic. The topic for this proposal must differ from the student’s dissertation topic. The student will obtain an application kit from the previous year in which he/she is preparing their application. It must be kept in mind that this is an examination to determine the student’s knowledge and abilities as defined by the Program’s identified core curriculum areas (see Appendix 1). Faculty members will not edit the grant proposal before it is submitted to the supervisory committee. They can provide general guidance related to the guidelines of the Grant Program.

The student will submit the grant proposal and documents that outline or explain the guidelines required by the granting agency to their supervisory committee. The committee members will grade the proposal.

Granting agencies have their own formats; however, all grant proposals must have the following sections or contents: 1) Identify and define problem – justification of research; 2) Research plan; 3) Experimental design/data analyses; and 4) Budget. Each of the four sections will be assigned a maximum of 25 points. The grant will be evaluated on its complexity, creativity, clarity, and completeness based on the 6 core curriculum areas 1) cereal and food chemistry; 2) grain composition; 3) grain processing technology; 4) functionality and analysis of chemical components in grain; 5) experimental design/data interpretation; and 6) communication (see Appendix 1). The student will receive the graded proposals and is encouraged to do further study in core areas that are identified as deficient before taking the oral examination.
Oral portion.
The oral examination will be administered within two to four weeks after the written examination is graded. Scheduling of the oral examination will be at the convenience of the student, advisor, and committee members. As stated in the Graduate School webpage (https://bulletin.ndsu.edu/graduate/graduate-school-policies/doctoral-degree-policies/#dissertationtext),

‘Permission to schedule the examination must be requested of the Graduate School by the student's major advisor using the Request to Schedule Examination form. The request to schedule must be received by the Graduate School at least two (2) weeks prior to the examination. The notification by the Graduate School will confirm this scheduled examination.’

The oral examination will cover the 6 core curriculum areas with special emphasis on those areas identified as deficient by the written proposal. At the end of the oral examination, the student’s committee will deliberate and decide whether the student ‘passed’ or ‘failed’ the Comprehensive examination. The student will be informed at that time.

Failed examination.
‘A negative vote by more than one member of the student's committee will signify failure of either the comprehensive/preliminary examination. Upon permission of a majority of the supervisory committee members, a candidate is allowed to take each examination twice. The supervisory committee will set a date at least one month after the failed examination. Exception to this time limit will be considered by the Dean of the Graduate School upon presentation of written justification from the chair of the supervisory committee in consultation with the committee members.

Should both attempts to pass an examination result in failure, the candidate may request to take the examination a third time. A request for a third examination requires the support of the supervisory committee and program coordinator, and the approval of the Dean of the Graduate School after consultation with the Graduate Council.’ – from Graduate school policy

The re-examination must be taken no sooner than 3 months but no longer than 6 months after the failed examination. The student would be required to write a proposal on a different topic and go through the testing format as described above.

Important Policies.
A student may not switch formats when required to retake the Comprehensive examination.
A student that fails the Comprehensive examination twice is removed from the Ph.D. program.
For the Appeals Process, please consult the Graduate School webpage.
https://bulletin.ndsu.edu/search/?P=appeals
At least one academic semester must elapse between admission to candidacy and oral defense of the dissertation.

Writing a thesis can be a long, yet rewarding task. It can also be a short and rewarding process. A student can never start early enough to begin organizing and writing their thesis. A student should
plan to start preparing their thesis on their first day. The important point to make is that the thesis must be acceptable in both scientific content and English usage. It is recognized there can be changes up until the thesis is bound!

The following advice is provided to help a student in preparing their thesis.

- The student should obtain a copy of the guidelines for the preparation of a thesis from the graduate school: [https://www.ndsu.edu/gradschool/graduating_students/dtp/format/](https://www.ndsu.edu/gradschool/graduating_students/dtp/format/)
- Become familiar with examples of a good thesis in your area of study. Ask your advisor, committee members, or other faculty members for good examples. A goal for the Program is that every thesis be a good example.
- Work with your advisor. Each advisor has their own policy regarding the help provided to the student.
  - It is the advisor's responsibility to read, edit, and help a student make any necessary changes before allowing the student to give it to their supervisory committee.
  - It is not the advisor’s responsibility to write a thesis, nor correct a poorly written one. Ultimately, it is the student's responsibility to write the thesis/dissertation and present it to their advisor in an acceptable format and acceptable English. The student may wish to seek outside help form others, including The Center for Writers at NDSU.
  - Costs for typing the thesis, making copies of it, binding costs, etc are the responsibility of the student.

**Dissertation Video**

Doctoral students are required to submit a three-minute video summarizing their dissertation research for a lay audience. The video should be produced during the final semester of study. The video is presented to supervisory committee for approval at the dissertation defense.

**Thesis/Dissertation Defense.**

The student working with their advisor and committee must schedule the thesis/dissertation defense with the Graduate School two weeks prior to the meeting date.

A copy of the thesis/dissertation must be submitted to the student's supervisory committee one week (7 days) before the thesis defense date. The thesis should be in a very good form, both technically and grammatically, when submitted. The student must be considerate of all committee members in giving them adequate time to read the thesis.

**M.S. Thesis Defense.**

There will be an oral examination of an M.S. candidate's course work conducted in conjunction with the thesis defense. It is at the discretion of the advisor and the advisory committee as to the scope and format for this oral examination. This examination should be completed within two years and no later than 2.5 years (30 months) after the student's first day. Exceptions may be made only under extenuating circumstances.

**Ph.D. Dissertation Defense.**

There will be an oral examination of the Ph.D. candidate's dissertation.

- For Ph.D. students with a M.S. degree, this examination should be completed within three years (36 months) and no later than 3.5 years (42 months) after the student's first day. Allowances may be made only under extenuating circumstances.
- For Ph.D. students starting with a BS degree, the dissertation defense should occur within 4.5 years (54 months) and no later than 5 years (60 months).
Failed examination.
A negative vote by more than one member of the student’s committee will signify failure of the M.S. Thesis Defense or the Ph.D. Dissertation Defense. According to the Graduate School ‘The student may repeat the examination only upon permission from a majority of the supervisory committee. The committee will set a date at least one month after the failed examination. Exceptions to this time limit will be considered by the graduate dean upon presentation of written justification from the chair of the committee in consultation with the committee.

Should the examination be failed twice, the student will not be given a third examination except by recommendation of the examining committee, program administrator, and special approval of the Dean of the Graduate College following consultation with the Graduate Council.’

After the defense.
These items must be accomplished before the coordinator of the Cereal Science Graduate Program will sign and approve a student’s thesis/dissertation. This final signature signifies the student has fulfilled all requirements for the degree.

- Student must schedule an exit seminar. Contact the Graduate Student Secretary (currently Shannon Ueker) at least 2 weeks before giving the seminar.
- Student must make all corrections and submit the thesis to the Graduate School for final acceptance. Ordering a bound copy is at the discretion of student and advisor.
- See Graduate School guidelines concerning filing their thesis/dissertation with the Graduate School. [https://www.ndsu.edu/gradschool/graduating_students/dtp/format/](https://www.ndsu.edu/gradschool/graduating_students/dtp/format/)
- Student must complete an exit interview with the coordinator of the Cereal Science Graduate Program and/or Head of Department of Plant Sciences, or designee.
- Immediately following the exit interview, the student will check their personal file in the main office to finalize their records and make any last corrections.
- The student will complete the forwarding address form and return any keys belonging to NDSU.
- A black and white head shot is needed for our graduate gallery. One photograph is to be taken at the expense of the Cereal Science Graduate Program before leaving NDSU. Please bring your finished photo to the Graduate Student Secretary (currently Shannon Ueker).

Leaving the Cereal Science Graduate Program and NDSU.
Before leaving the department upon finishing their degree, a student must accomplish the following:

- Turn in keys
- Provide a forwarding address
- Have an exit interview with the coordinator of the Cereal Science Graduate Program
- Have picture taken
- Return any and all publications/books to the Libraries
- Provide advisor a copy of all data and laboratory notebooks
- Remove all unnecessary files from computer hard drive
- Clean your desk and work area. Dispose of unneeded samples. Box, label, and store all needed samples.
If you are a GRA and plan to leave campus (thereby ending your employment) before the end of the term, please note that you must work 20 hours/week for at LEAST 8 consecutive weeks for the tuition waiver to be applied.  

**A note for advising faculty:** this rule would pertain to a new student coming on board or one leaving. At LEAST 8 consecutive weeks of work per semester (spring and fall) much be completed for the waiver to be granted.

**Internships and Job Placement.**
As graduate students, the possibility exists of internships in the industry. Please check with your major advisor or coordinator of Cereal Science Graduate Program. All students are strongly encouraged to participate in an internship during the course of their graduate studies. Many large companies fill their internship positions in September. Begin planning for internship the summer before you plan to participate.

All announcements of positions are available to staff and students from NDSU Career Center: [http://www.ndsu.edu/career/](http://www.ndsu.edu/career/)

Faculty members are always alert to job opportunities of possible interest to graduate students. It is a responsibility of all faculty in the Cereal Science Graduate Program to assist students in finding a job. Students should keep in mind that although it is the responsibility of all faculty to ASSIST students in finding a job, it is the student’s ultimate responsibility in finding an internship and/or permanent employment. Students are referred to the NDSU Career Center for additional assistance in locating internships and employment: [http://www.ndsu.edu/career/](http://www.ndsu.edu/career/)
PART IV RESEARCH

General Statement.
As mentioned above, policies associated with research and funding fall under the domain of the faculty member’s home department and can vary. Contact faculty member’s home department for a list of applicable policies.

Special Research Permissions.
University policy requires that if your research involves humans, large animals, and/or biohazards, you must have approval from the Institutional Review Board, Institutional Animal Care and Use Committee, and/or the Institutional Biosafety Committee. This includes sensory evaluation.

- Consult following webpages:
  - https://bulletin.ndsu.edu/graduate/graduate-school-policies/doctoral-degree-policies/#dissertationtext;
  - https://www.ndsu.edu/gradschool/graduating_students/dtp/research/

Submit to The Graduate School a copy of the letter(s) sent to you by IRB/IACUC/IBC when your research project was approved. The editor will not review your disquisition until it is confirmed that your project was approved by IRB/IACUC/IBC. Approval cannot be granted retroactively.

Research Facilities.
Research activities are under the control of the laboratory and processing space assigned to your advisor. Space is available to you for research or teaching purposes within reasonable limits. There is certain equipment and space that is restricted to certain work or projects. Space and equipment outside your advisor’s area requires permission from faculty assigned to that space/equipment. The major advisor and project leader responsible for the equipment should be consulted regarding its use, and the equipment should be maintained in good condition.

Use of USDA and NCI facilities.
Equipment and laboratory areas under the control of the USDA and/or NCI should not be used without permission of the USDA and/or NCI scientist(s) responsible for the equipment and areas.

Use of facilities in other departments.
The Cereal Science Graduate Program involves faculty from different departments. The major advisor should be asked to make arrangements for use of space and replacement of all chemicals or materials used, or cost charges involved. Their facilities should be used with great care and consideration.

Use of NDSU Libraries.
North Dakota State University Libraries website: http://library.ndsu.edu/
Books can be checked out for four months, renewable twice. Journals can be checked out for three days, non-renewable. There is a fine for overdue materials.
If NDSU does not own a publication you need, request our Interlibrary Loan office to provide it for you. Usually there is no fee for this service. Call 231-8885 for further information.
- Online research databases are available through the library webpage at https://library.ndsu.edu/
- LibGuides for Cereal and Food Science http://guides.lib.ndsu.nodak.edu/cfs
- LibGuides for Plant Sciences http://guides.lib.ndsu.nodak.edu/plsc
**Purchases.**

Policies regarding ordering/purchasing supplies differ with department affiliation of the major advisor. Consult your advisor regarding purchase of supplies. Certain procedures must be followed for all purchases and those involving on-campus purchases are very specific.

Purchases from the Department of Chemistry require the signature of a staff member. Chemistry will bill the department. Purchase of ethyl alcohol (ethanol) is controlled by the Chemistry stockroom because of the exemption from federal tax involved.

**Mandatory Institutional Training.**

Every student is required to complete the following safety courses ANNUALLY:

- Baseline Training
- Supervisor Training: any student that supervises time slip workers needs to complete this training
- Sexual Harassment Training
- Laboratory and Chemical Safety Training: Laboratory and chemical safety course is required if the student works in a chemical laboratory

Link to training here: [https://www.ndsu.edu/police_safety/annual_notices_and_training/](https://www.ndsu.edu/police_safety/annual_notices_and_training/)

If your research involves humans, large animals, and/or biohazards, you must have approval from the Institutional Review Board, Institutional Animal Care and Use Committee, and/or the Institutional Biosafety Committee. *This includes sensory evaluation.*

Consult following webpage: [https://www.ndsu.edu/gradschool/graduating_students/dtp/research/](https://www.ndsu.edu/gradschool/graduating_students/dtp/research/)

**General Safety.**

To report a material spill: 231-7759

**If an emergency does occur.**

- Call 911 and report the nature of the emergency.
- Do NOT move any injured persons unless they are in further danger. Keep them warm.
- If chemicals have been spilled on someone, get the person under a shower and wash the affected area thoroughly. If a person's clothing is on fire, wrap the person with a fire blanket or get them under a shower.

**Non-emergency medical care for work injury.**

A reporting process must be followed. Find steps and the form at this location: [https://www.ndsu.edu/fileadmin/vpfa/forms/UPSO-incidentReport.pdf](https://www.ndsu.edu/fileadmin/vpfa/forms/UPSO-incidentReport.pdf)

**Food.**

Drinking or eating is forbidden in the chemical laboratories or storage areas because of the possibility of chemicals getting into the mouth or lungs.

Safety is everyone's responsibility. All normal safety precautions should be used in the operation of equipment and in handling of chemicals. Be aware of the location and proper operation of fire extinguishers, fire blankets, safety showers, and other safety devices in every area in which you work. If there is any doubt about the operation of a piece of equipment or the procedures for handling hazardous chemicals, consult your advisor.

**UNDER NO CIRCUMSTANCES SHOULD DANGEROUS EQUIPMENT OR HAZARDOUS CHEMICALS BE USED WHEN YOU ARE IN THE BUILDING ALONE.**
Consult the department in which work is being conducted regarding after hours policies. In general, do not work alone in a laboratory or building. Use the ‘Buddy System’. Have at least one person in the building and aware that you are working in the laboratory or contact campus police to let them know that you are working alone. This is for your personal safety to prevent attacks and to have someone to help during an emergency.

Each project has a safety protocol specific for the work encountered on that project. Your supervisor should discuss this protocol with you before you begin work. This protocol must be signed and returned to the University Safety Officer.

**Waste Solvents.**
You are responsible for all waste material generated by your experiments. The NDSU Safety Office will pick up your waste for disposal. Consult with the laboratory technicians.
For more information refer to Safety Office webpage: https://www.ndsu.edu/police_safety/
PART V ACADEMICS

NDSU Master of Science Requirements.
Minimum of 30 credits total, of which are 6-10 thesis research credits CFS 798.
Minimum of 16 course credits in 601-689 and/or 700-789 level.
Please see the Graduate School Bulletin for more details [https://bulletin.ndsu.edu/graduate/](https://bulletin.ndsu.edu/graduate/)

Program Prerequisites.
All students entering the Cereal Science Graduate Program are required to have had a microbiology and a biochemistry course. A student lacking either of these courses will be required to take remedial action as agreed upon by the Graduate Student’s Major Advisor and the Student’s Advisory Committee.

Program Requirements.
Total: 19 didactic credits and 12 non didactic credits (CFS 790/CFS 798).
CFS 650: Cereal Technology 3 credits
CFS 790: Graduate Seminar 2 credits
CFS 798: Master’s Thesis 10 credits
Statistics (one of the following) 3 credits
  PLSC 724: Field Design I
  STAT 662: Introduction to Experimental Design
  STAT 725: Applied Statistics
PLSC 710: Professional Development I 1 credit
Courses Listed in the Technology Group 6 credits
Courses Listed in the Science Group 6 credits

Technology Group.
CFS 630: Food Unit Operations (3); CFS 670: Food Processing II (3); CFS 671: Food Processing Laboratory (1); CFS 758: Fundamentals of Flour Testing and Baking (3); CFS 759: Milling (3); CFS 760: Pasta Processing (3); CFS 761: Malting and Brewing (3).

Science Group.
MICR 653: Food Microbiology (3); CFS 660: Food Chemistry (3); CFS 661: Food Chemistry Laboratory (1); CFS 662: Food Ingredient Technology (3); CFS 664: Food Analysis (3); CFS 672: Cereal and Food Fermentation (3); CFS 674: Sensory Science of Food (2); MICR 752: Advanced Food Microbiology (3); CFS 764: Carbohydrate Chemistry (2); CFS 765: Advanced Cereal and Food Chemistry I (4); CFS 766: Advanced Cereal and Food Chemistry II (4).

These courses fulfill the MINIMUM credit requirement. Additional courses can be taken as agreed upon by Graduate Student and the Student’s Advisory Committee. These courses can be selected from any area of CFS, plant sciences, chemistry, microbiological sciences, food safety, agricultural & biosystems engineering, or other relevant area.

Other Non-Didactic Courses – Not Required.
CFS 792 Master’s Teaching Experience (2); CFS 793 Individual Study (1-5); CFS 794 Practicum/Internship (1-15); CFS 796 Special Topics (1-5)

Transfer Credits.
An incoming student with the Department’s approval may have up to 8 hours of graduate level credits
considered transferable from another department or institution upon entering the M.S. program in Cereal Sciences.

**Advisor and Graduate Committee.**
Both the student's advisor and graduate committee will play a vital role in developing their graduate program of study and research. The above requirements and suggestions are a MINIMUM set of standards. Both a student's advisor and committee may recommend and require additional courses and training.
NDSU Doctor of Philosophy Requirements.

With previous Masters of Science (M.S.): Minimum of 61 credits, 15 from 700-789 level
Without previous M.S. degree: Minimum of 91 credits, 27 from 601-689 and 700-789, at least 15 credits from 700-789
Please see the Graduate School Bulletin for more details [https://bulletin.ndsu.edu/graduate/](https://bulletin.ndsu.edu/graduate/)

Program Requirements

Total: 27 didactic credits and 34 non didactic credits (CFS 892/CFS 790/CFS 899)
CFS 650: Cereal Technology 3 credits
CFS 765: Advanced Cereal and Food Chemistry I 4 credits
CFS 766: Advanced Cereal and Food Chemistry II 4 credits
CFS 790: Graduate Seminar 2 credits
CFS 892: Doctoral Teaching Experience 2 credits
CFS 899: Doctoral Dissertation 30 credits
Statistics (one of the following)* 3 credits
  - PLSC 724: Field Design I
  - STAT 662: Introduction to Experimental Design
  - STAT 725: Applied Statistics
PLSC 710: Professional Development I 1 credit
PLSC 711: Professional Development II 1 credit
Courses Listed in the Technology Group 9 credits
Courses Listed in the Science Group 2 credits

*Advanced Statistics: Ph.D. students are required to have additional training in statistics as agreed upon by the Graduate Student and the Student’s Advisory Committee

Technology Group

CFS 630: Food Unit Operations (3); CFS 670: Food Processing II (3); CFS 671: Food Processing Laboratory (1); CFS 758: Fundamentals of Flour Testing and Baking (3); CFS 759: Milling (3); CFS 760: Pasta Processing (3); CFS 761: Malting and Brewing (3).

Science Group

MICR 653: Food Microbiology (3); CFS 660: Food Chemistry (3); CFS 661: Food Chemistry Laboratory (1); CFS 662: Food Ingredient Technology (3); CFS 664: Food Analysis (3); CFS 672: Cereal and Food Fermentation (3); CFS 674: Sensory Science of Food (2); MICR 752: Advanced Food Microbiology (3); CFS 764: Carbohydrate Chemistry (2).

Additional course credits can be selected from any area of CFS, Plant Sciences, Chemistry, Veterinary and Microbiological Sciences, Food Safety, Agricultural & Biosystems Engineering or other relevant science and engineering fields.

Note: If equivalent courses were taken at other institutions, the student may then take courses in other areas of specialization such as statistics, chemistry, food safety, agricultural and biosystems engineering, etc. at the discretion of the advisory committee.

Other Non-didactic Courses – Not Required.

CFS 793 Individual Study (1-5); CFS 794 Practicum/Internship (1-15); CFS 796 Special Topics (1-5)

Transfer Credits.

An incoming student with the Department’s approval may have up to 12 hours of graduate school
credits considered transferable from another department or institution upon entering the Ph.D. program in Cereal Sciences. **A student receiving their M.S. in Cereal Science at NDSU may be allowed to transfer only up to 20 hours towards the Ph.D. requirements.** Please see the Graduate School Bulletin for more details. [https://bulletin.ndsu.edu/graduate/](https://bulletin.ndsu.edu/graduate/)

**Advisor and Graduate Committee.**
Both the student's advisor and graduate committee will play a vital role in developing their graduate program of study and research. The above requirements and suggestions are a minimum set of standards. Both a student's advisor and committee may recommend and require additional courses and training.

**Related Graduate Certificates.**
In support of its desired outcomes, the Cereal Science Graduate Program supports additional training in food safety and statistics.

**Food Protection Certification.**
Graduate certificate in food protection is available for students who complete 9 credits of core courses. [https://bulletin.ndsu.edu/graduate/programs/food-safety/](https://bulletin.ndsu.edu/graduate/programs/food-safety/)

**Statistics Certification.**
Graduate certificate in statistics is available. Requirements: B.S. or equivalent degree from an accredited university. Knowledge of college algebra. Twelve semester hours to include STAT 725: *Applied Statistics*, STAT 726: *Applied Regression & Analysis of Variance*, and two pre-approved graduate level courses in statistics. [https://bulletin.ndsu.edu/graduate/programs/statistics/](https://bulletin.ndsu.edu/graduate/programs/statistics/)

**College Teaching Certification.**
Ph.D. students with academic aspirations are encouraged to obtain a College Teaching Certificate. For information on **College Teaching certificate** see: [https://bulletin.ndsu.edu/graduate/programs/collegeteaching/](https://bulletin.ndsu.edu/graduate/programs/collegeteaching/)

**Graduate Cereal Science Courses Offered and Their Descriptions**

**CFS 630 Food Unit Operations 3** The course is designed to cover fundamental principles of mass and energy balances, fluid flow, heat and mass transfer, thermodynamics and psychrometrics. Prerequisite: Introduction to Food Science (CFS 210), Math 146, Food processing or equivalent experience.

**CFS 650 Cereal Technology 3** Discussion of cereal grains, their properties, evaluation, and utilization.

**MICR 653 Food Microbiology 3** Study of the nature, physiology, and interactions of microorganisms in foods. Introduction to foodborne diseases, effects of food processing on the microflora of foods, principles of food preservation, food spoilage, and foods produced by microorganisms. Prereq: Biol 202L or Micr 350L.

**CFS 660 Food Chemistry 3** Study of food components, including water, carbohydrates, lipids, proteins, vitamins, minerals, and enzymes. Prereq: CS 210; Chem 341, 341L; Bioc 460.

**CFS 661 Food Chemistry Laboratory 1** Laboratory isolation, observation of characteristics, and quantitation of food components. Coreq: CS 460/660.

**CFS 662 Food Ingredient Technology 3** The course will present principles and discuss utilization of food ingredients, additives such as color, sweeteners, flavor, gums, antimicrobial agents. It provides Chemical and physical nature of food ingredients; functions and effects on chemical, rheological, microbiological, and nutritional properties of foods. Prerequisite: Introduction to Food Science (CFS 210) or equivalent experience.

**CFS 664 Food Analysis 3** Principles, applications, and practice of methods for quantitative
determination of food components. Two lectures and one 3-hour laboratory. Prereq: Bioc 460, CFS 460/660, or departmental approval.

**CFS 670 Food Processing II** 3 Capstone course integrating principles of food chemistry, food microbiology, food engineering, nutrition, statistics, and sensory evaluation through the discussion of food processing operations. Prereq: CS 450, 460, or departmental approval.

**CFS 671 Food Processing Laboratory** 1 Field trips, experiments on freezing, freeze drying, spray drying, canning, beverage production, water activity measurements, shelf life, and quality control. Coreq: CS 470/670.

**CFS 672 Cereal and Food Fermentation** 3 Integrates principles of food microbiology, biochemistry, and discussion of food fermentation processing. Areas covered include microorganisms involved in fermentation; dairy, meat, vegetable, cereal grain, fruit and unique fermented foods and their processing, food safety of fermented foods. Two lectures and one 2.5-hour laboratory per week. Prereq: CFS 370, MICR 350 or MICR 453, or departmental approval.

**CFS 674 Sensory Science of Food** 2 The science used in the evaluation of flavor, color, and texture of foods. Experiential approaches will be used to evaluate sensory characteristics of foods. Prereq: CFS 460 and STAT 330.

**CFS 680 Food Product Development** 3 This course is designed to provide students the opportunity to incorporate the basic principles of food science in the theoretical development of food products. (Food Science Capstone) Prereq: CFS 453, 464, 470.


**CFS 759 Milling** 3 Experimental and industrial feed and flour milling. Production, equipment, and factors involved in the milling process. Lectures and laboratories. Prereq: CFS 450/650.

**CFS 760 Pasta Processing** 3 Durum wheat quality, pasta production, and pasta quality evaluation. Lectures and laboratories. Prereq: CFS 450/650.

**CFS 761 Malting and Brewing** 2 Barley and malt quality; malting and brewing. Lectures and laboratories. Prereq: CFS 450/650.

**CFS 764 Carbohydrate Chemistry** 2 Structural features of carbohydrates, and characterization of monosaccharides, oligosaccharides, polysaccharides, and glycoconjugates in plants and microorganisms using analytical methods such as calorimetric assays, LC, HPLC, GC and NMR.

**CFS 765 Advanced Cereal and Food Chemistry I** 4 Crop biochemistry including enzyme kinetics, pathways involved in mineral uptake, nitrogen and sulfur assimilation, photosynthesis, and synthesis, deposition, and degradation of protein, starch, lipids, and secondary metabolites.

**CFS 766 Advanced Cereal and Food Chemistry II** 4 Physiochemical, structural, and functional properties of cereal and food proteins, lipids, and carbohydrates in food systems.

**CFS 792 Master's Teaching Experience** 2

**CFS 892 Doctoral Teaching Experience** 2

The following variable credit courses are also offered:

**CFS 790 Seminar** 1-3

**CFS 793 Individual Study** 1-5

The intent of this course is to provide student with the opportunity to develop specialized skills in areas relevant to Cereal and Food Sciences not covered in available courses. This course required that the student work independently to achieve the specialized skill.

**CFS 794 Practicum/Internship** 1-15

**CFS 796 Special Topics** 1-5

The intent of this course is to provide student with the opportunity to gain knowledge in areas
relevant to Cereal and Food Sciences not covered in available courses. The special topic will be developed by an instructor and will not require that complete independence.

CFS 798 Master's Thesis 1-6
CFS 899 Doctoral Dissertation 1-6
PART VI SUGGESTIONS FOR ORIENTING NEW GRADUATE STUDENTS

Graduate School orientation.
Graduate school has orientations prior to the beginning of each semester.
http://www.ndsu.edu/gradschool/

International Students in Cereal Science.
- International Student Office conducts orientations just prior to the beginning of each semester.
  https://www.ndsu.edu/international/
- Escort the person to the International Student Office, Memorial Union, to receive a campus information packet. Bring passport, 1-20, etc.
  - Inquire about other students of same nationality and get phone numbers.
- Establish a checking account. A social security number is necessary, but banks will allow students to establish a checking account if they know a social security number application is being processed.
- North Dakota Driver’s License Information/Testing Books. (503 38th St S, Fargo) Social Security Number is required to obtain license.
  - Rental cars are available at Hector Airport.
  - Parking Permits are available on a first come, first served basis from the NDSU Parking Office, corner of 18th St and 15th Ave.
- North Dakota tourist information packets and state/city maps are helpful
- Immunization: measles shot is necessary for class registration at NDSU. Be sure the new student has verification of immunization before attempting to register at NDSU. The student can get a shot at the Community Health Center or UND Family Practice Center.

All Students in Cereal Science.
Coordinate first day plans with student’s advisor
- Pick up keys that were ordered as part of the contract (Appendix 4) from department main office
- Give student a building(s) tour
  - Introduce them to other graduate students, faculty, and staff
  - Show them the mail rooms (Harris and Loftsgard)
  - Note the solvent room (on dock) and acid room (in mill sample room)
  - Tell the student about rules regarding photocopier usage (research only, etc)
- Remind student that NDSU email is the official form of campus communication
  - Issue a Graduate Student Handbook via email link
- Answer any questions the student may have regarding class schedules and department requirements, including health insurance
- Give the student a tour of the University
  - NDSU bookstore
  - Cafeterias
  - Main Library
  - Memorial Union (get Bison Card)
  - Discuss housing options both on and off campus
    - Discuss child care
PART VII APPENDICES

Appendix 1
Cereal Science Graduate Curriculum Evaluation and Development

Statement of expectations for our graduated M.S. and Ph.D. students

M.S. graduate should have the knowledge and comprehension of the composition, functionality and utilization of cereals that will allow them to solve and analyze challenges within their field of employment.

Ph.D. graduate should possess the competencies of a M.S. graduate and should further be able to analyze, synthesize, and evaluate cereal based systems to meet the demands of their field of employment.

NOTE 1: To fully understand the above statement of expectations, please refer to Bloom’s Taxonomy of learning
NOTE 2: Grain is used instead of cereal to reflect the diversity of plant crops researched by faculty.

SIX AREAS OF MINIMUM CORE COMPETENCIES and their desired outcomes.
1. Cereal/food chemistry. Desired outcome: Knowledge of chemistry and biochemistry involve in cereals and food systems
   a. Expectation of learning. Basic understanding of:
      i. Basic genetics
      ii. Enzyme systems
      iii. Inter-relationships among biochemical pathways
      iv. The chemistry underlying the properties and reactions of various food components
      v. The influences of growing environment on structure/properties of cereal/grain components.

2. Grain composition Desired Outcome: Knowledge of grain composition and variations associated in composition caused by genetics and environment.
   a. Expectation of learning. Basic understanding of:
      i. Composition of major grains
      ii. Variation in composition caused by genetics, growing environment, and storage environment.
      iii. Grain quality factors/tests

3. Grain processing technologies Desired outcome: Knowledge of common grain processing technologies, these would include: size reduction, fermentation, baking, cooking, preservation, and sheeting/extrusion.
   a. Expectation of learning. Basic understanding of:
      i. Size reduction
      ii. Fermentation
      iii. Baking
iv. Heat processing – blanching, canning, drying
v. Preservation – packaging
vi. Sheet/extrusion

4. Functionality and analysis of chemical components found in grain. **Desired outcome:** Knowledge of how these common grain processing technologies affect functionality of chemical components found in grain.
   a. **Expectation of learning.** Basic understanding of:
      i. Components in natural state
      ii. Components during/after processing
      iii. Interaction among components and ingredients
      iv. Food analysis – physical, chemical, sensorial, microbial

5. Experimental design and interpretation. **Desired outcome:** Ability to design and plan an experiment and then interpret the results. Graduates need enough knowledge to be able to communicate their needs to a statistician and be able to understand what the statistician is telling them, and in addition, Ph.D. graduates need to be able to critically interpret data presented in research articles.
   a. **Expectation of learning.** Basic understanding of:
      i. Design, plan, budget projects
      ii. Define problem, identify causes, suggest solution
      iii. Apply and interpret statistics used in cereal/food sciences

6. Communication. **Desired outcome:** Ability to communicate - written and oral - in different settings and on current topics of the discipline.
   a. **Expectation of learning.** Basic understanding of:
      i. Oral communication - ability to orally communicate depth of knowledge
      ii. Written communication - grants, email, letters, short reports
      iii. Professional networking - ability to successfully network.
Appendix 2

TRAVEL SCHOLARSHIP APPLICATION
Cereal Science Graduate Program
Department of Plant Sciences

Name ___________________________________________ Degree ____________________

Application Date __________________________ Empl ID ____________ GPA __________

Advisor _______________________________________

IF YOU ARE APPLYING FOR A TRAVEL SCHOLARSHIP IN ORDER TO ATTEND A MEETING AND/OR WORKSHOP, PLEASE INDICATE THE TITLE, AS WELL AS THE LOCATION AND DATES.

Workshop/Meeting ______________________________________________________________

Location _______________________________________________________________________

Dates Attending __________________________________________________________________

ARE YOU: 
Presenting a Paper? ___________________________________________________________
If so, please indicate title. ☐ Yes ☐ No
Are you the 1st Author? ☐ Yes ☐ No

Presenting a Poster? ___________________________________________________________
If so, please indicate title. ☐ Yes ☐ No
Are you the 1st Author? ☐ Yes ☐ No

ESTIMATED TRAVEL COSTS
Airfare: ___________________ Meals: ___________________ Lodging
Registration: ______________ Misc: ___________________

ARE YOU RECEIVING ADDITIONAL FUNDING FOR THIS TRIP? ☐ Yes ☐ No
If so, how much: $____________ Source: __________________________________________
$____________ Source: __________________________________________
$____________ Source: __________________________________________

Please also attach a statement of no more than 150 words as to why this award would be of benefit. Submit both application and statement at least two weeks in advance to the Coordinator of the Cereal Science Graduate program, Harris Hall 133, North Dakota State University.

APPROVAL:

__________________________________________
Advisor

__________________________________________
Chair, Travel Award Committee

__________________________________________
Coordinator, Cereal Science Graduate Program
Appendix 3

Performance Review – Cereal Science Graduate Program – M.S. degree

Time period
Student Name
Date Started.
Thesis title.

Key points in time.
Within the first 4 months
Plan of study.
Date Due/Date completed __________/__________

Graduate supervisory committee formed.
Date Due/Date completed __________/__________

Within the first 6 months
Proposal approved.
Date Due/Date completed __________/__________

Courses completed.
Date completed __________

Thesis Defense.
Date completed __________

Thesis Oral Examination: The goal is for this examination completed within two years (24 months) and no later than 2.5 years (30 months) after the student’s “first day.” Allowances may be made only under extenuating circumstances, such as Internships.

Accomplishments and goals met – last 6 months
courses completed, manuscripts written, meetings attended, presentations, experiments completed ect.

Goals for next 6 months

Assessment of progress/remedial action needed

Advisor signature
Performance Review – Cereal Science Graduate Program – Ph.D. degree

Time period
Student Name
Date Started.
Dissertation title.

Key points in time.
Within the first 4 months
Plan of study.
Date Due/Date completed __________/__________

Graduate supervisory committee formed.
Date Due/Date completed __________/__________

Within the first 9 months
Proposal approved.
Date Due/Date completed __________/__________

Courses completed.
Date completed __________

Comprehensive preliminary examination.
Date completed __________/__________

Dissertation Defense.
Date completed __________

Ph.D. students with M.S. degree. The goal for this examination completed within three years (36 months) and no later than 3.5 years (42 months) after the student's “first day.” Allowances may be made only under extenuating circumstances, such as internships.
Ph.D. students starting with a BS degree. Examination should be completed within 4.5 years (54 months) and no later than 5 years (60 months).

Accomplishments and goals met – last 6 months
courses completed, manuscripts written, meetings attended, presentations, experiments completed etc.

Goals for next 6 months

Assessment of progress/remedial action needed

Advisor signature
Appendix 4.
Writable version of Department of Plant Sciences GRA/GTA contract is available from Graduate Student Secretary or Assistant to the Department Chair.
Rights and Privileges of Graduate Assistants

Graduate assistants have certain rights and privileges specific to the assistantship experience:

- The right to be notified in writing of all decisions that affect their status as a graduate assistant. This includes advance notification of evaluation procedures and a summary of their performance evaluation.
- The right to be notified of any complaints received by a supervisor or department chair concerning their performance of duties.
- The right to respond in writing to such complaints.
- The right, depending on the availability of departmental and university resources, to be supported in pursuing additional activities that pertain to their professional development.
- The right to balance their assistantship responsibilities with their responsibilities to their academic program so that they can complete their degree in a timely manner.
- The privilege of being treated as a professional in their chosen field of study.

Termination

Graduate assistants may have their assistantship terminated by the Dean of the College of Graduate and Interdisciplinary Studies, upon recommendation by their supervisor, with documentation of probable cause. Early termination for cause may occur when:

- A student does not abide by the appointment conditions.
- A student fails to perform tasks as assigned.
- A student does not make adequate progress.
- A student is placed on Academic Probation.
- A student does not make satisfactory research progress.
- A student fails to maintain minimum registration.
- A student persistently refuses to follow reasonable advice and counsel of faculty in carrying out assistantship obligations.
- A student fails to comply with responsibilities as an employee set forth in the Graduate Bulletin, department rules and regulations governing assistantships, or the terms of sponsored research agreements that fund the assistantship.
- A student's personal conduct is seriously prejudicial to the university, including violation of the NDSU Code of Student Behavior, state or federal law, and general university regulations.

From the Graduate Bulletin Graduate Assistantship policy: https://bulletin.ndsu.edu/graduate/graduate-school-policies/graduate-assistantship-policy/

I have read and understand the Graduate Assistantship Policy information above. (ital)

Student: __________
Department Head or Designee: __________
North Dakota State University Graduate Assistant Contract

Expectations

• Your performance will be reviewed by __________________. Your first performance review will occur on or around ____________. Continuation of this assistantship is contingent upon you receiving satisfactory performance reviews by your supervisor.

• To maintain this appointment you must continue to meet the academic standards established for Graduate Assistants by the University and remain in good standing at NDSU and in the graduate program.

• You will be expected to complete all graduate degree requirements, including thesis and dissertation research, with time outside of the paid assistantship work hours.

• This Graduate Assistantship is subject to the policies and procedures described in the Graduate Assistant Policy that can be found in the Graduate Bulletin.

• You are expected to fulfill your responsibilities adhering to the professional and academic expectations of your discipline and in compliance with NDUS and NDSU policies. Violations of these policies and expectations may result in sanctions including termination of your assistantship and/or dismissal from the Graduate School. Adjudication of these violations will occur in accord with NDSU Policy 335.1, or other appropriate policy.

• Your appointment may be renewed depending upon performance and the availability of funding. You must remain in good standing with NDSU, the Graduate School, and the graduate program to continue receiving an appointment.

This notice is effective only when approved by the University. No other official or employee of the University has authority to extend any offer of employment or re-employment or to modify or to adjust the terms thereof. Upon receipt of your acceptance of this offer, your appointment will be processed for action by the University administration.

Although this letter is necessarily focused on NDSU's policies and procedures and carries a somewhat legalistic tone, I do want to say that I'm excited that you may join our department at NDSU. You will find we have a very collegial atmosphere here; we will strive to help you meet your educational goals. If you have any questions please do not hesitate to contact: ____________________________

(supervisor name)

I accept this job offer as described above.

Prospective Employee: ____________________________ Date: ____________

Department Head or Designee: ____________________________ Date: ____________

cc: Dean of the Graduate School
    Human Resources

This contract letter represents our complete agreement and replaces all prior written or oral agreements for assistantships. If there is any term or provision that you feel should be a part of this contract, you need to have this contract revised so that it is included or it will not be part of your contract [please discuss its inclusion with your supervisor before signing and returning this letter as its addition must be agreed to by the University]. The reason for this is to avoid any misunderstanding in the future about what was promised and accepted between us.

To be completed by hiring supervisor:

A PLSC computer will be needed: ☐ Yes ☐ No
Funding for stipend:

Keys needed: Room number ____________ Building ____________
             Room number ____________ Building ____________
             Room number ____________ Building ____________

Main office use:
Student office location: ____________________________