

**FOOD SCIENCE AND FLAVOR CHEMISTRY  
MASTER OF SCIENCE (MS) DEGREE  
GRADUATE STUDENT HANDBOOK**

**2022-2023**



**TEXAS WOMAN'S  
UNIVERSITY**

**Department of Nutrition and Food Sciences  
Texas Woman's University**

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**Each student in the master's program is responsible for reading and adhering to the policies within this handbook.**

**See Nutrition and Food Sciences Website:**

<https://twu.edu/nutrition-food-sciences/graduate-programs/ms-in-nutrition/>

**See Graduate School Website:**

<https://www.twu.edu/gradschool/>

**Please see the website for all current forms:**

<https://twu.edu/gradschool/forms/>

# **MASTER OF SCIENCE DEGREE IN FOOD SCIENCE AND FLAVOR CHEMISTRY**

## **MISSION**

The Master's program in Food Science and Flavor Chemistry through the Department of Nutrition and Food Sciences promotes transformational learning through research, teaching, and leadership. Students acquire knowledge and critical thinking skills in food science and flavor chemistry through engaged learning and scholarly activity, culminating in a Master of Science degree.

## **VISION**

To be a program recognized for its expertise in studying food and breaking down food compounds scientifically using flavor instrumental analysis and sensory evaluation, so their taste and aromas can be measured and replicated in the lab, assisting the development of new flavors.

## **INTRODUCTION**

Texas Woman's University (TWU) offers the Master of Science (MS) in Food Science and Flavor Chemistry through the Department of Nutrition and Food Sciences (NFS) in the College of Health Sciences. The degree program strengthens and reinforces knowledge of food and flavor chemistry, sensory characterization, and food compositional analysis, while reinforcing the importance of collaborative, multidiscipline research efforts by the faculty. The primary goals, objectives, and expectations of this program are the following:

- a) To understand experimental methods used to expand knowledge on food and food components.
- b) To apply knowledge in the development of written and verbal communications.
- c) To apply techniques of food analysis and food chemistry to different foods.
- d) To interpret flavor chemistry and food science research findings and literature to formulate reports at the operations level of a food industry manager.
- e) To provide an appropriate learning atmosphere that encourages independent thinking, creativity, and professionalism, at all stages of the program
- f) To develop students with strong research, problem-solving capability, and critical thinking skills.

Students must complete a minimum of 30 semester credit hours and a thesis is required. Courses include advanced work in research methods and/or statistics, flavor analysis and flavor technology, and 6 hours of thesis.

Unique lab skills, collaborative research, and practical experiences are the major components of the MS Food Science and Flavor Chemistry program. Our flavor chemistry students have performed the research in the following areas:

- Food flavor instrumental analysis
- Food descriptive sensory analysis and consumer tests
- Flavor of agriculture produce and food industry products
- Food flavor related health benefits and nutritional values

## **ADMISSION POLICIES**

### ***Admission criteria: Undergraduate GPA, and measures of the student's potential.***

The applicant must comply with all Graduate School admission criteria and be admitted into the Graduate School at TWU prior to being admitted into the MS Food Science and Flavor Chemistry program. There are two types of admission status: unconditional and provisional.

- **Unconditional admission:** The applicant must present: (a) a baccalaureate degree in food science or its equivalent; (b) official transcripts showing evidence of prerequisite undergraduate courses in chemistry (9-12 hours) and food science (6-9 hours); (c) a grade point average (GPA) of at least a 3.25 on a 4.0 scale on the last 60 hours of formal coursework with a major in food science.
- **Conditional admission:** Applicants who meet the TWU Graduate School admission criteria, and GPA admission standards but lack prerequisite courses are admitted as conditional until these courses are satisfactorily completed. When equivalent courses exist, prerequisite courses may be completed at the graduate level. These courses must be completed during the first year of graduate study. Once prerequisite courses are completed, the student's major professor will send a letter to the Graduate School (Change of Status- Conditional to Unconditional at <https://twu.edu/gradschool/forms/>

### ***Graduate credit by transfer from another institution***

There is no automatic transfer of graduate credits. The student's advisory committee may recommend, and the Dean of the Graduate School may approve specific courses for transfer credit as a part of the student's master's degree plan. The maximum possible number of credits that may be transferred is 6 semester hours.

### ***Residence***

Rules and regulations for determining residence status in the State of Texas are specified under Title 3 of the Texas Education Code. Refer to the Graduate School website (<https://twu.edu/gradschool/>) and forms for further details and information for petitioning a change in residency classification.

### ***Teaching and / or Research Assistantships***

The Department of NFS provides a limited number of teaching assistantships for qualified graduate students. Applications for teaching assistantships may be secured from the Department of NFS office administrators. Refer to: <https://twu.edu/gradschool/graduate-assistants/> for more information on requirements, orientation, and insurance benefits. Applications for research assistantships should be determined by the faculty in this program. Email to [xdu@twu.edu](mailto:xdu@twu.edu) for more information and requirements.

## **COURSE REQUIREMENTS FOR MS IN FOOD SCIENCE AND FLAVOR CHEMISTRY**

### ***Group I – Required Core Courses: (22 hours)***

NFS 5003 Food Chemistry  
NFS 5013 Sensory Evaluation of Foods  
NFS 5023 Food Analysis  
NFS 5321 Seminar in Food Science  
NFS 5903.01 Special Topics (Flavor Analysis)  
NFS 5903.03 Special Topics (Flavor Technology)  
NFS 5963 Research in Nutrition and Food Sciences

Take **one** of the following 3 credit hour courses to meet research tool requirements:

- NFS 5233 Research Techniques in Nutrition Science
- MATH 5573 Statistical Methods I
- KINS 5033 Applied Statistical Principles
- NFS 5913 Independent Study

### ***Group II – Required Thesis Courses: (6 hours)***

NFS 5983 Thesis I  
NFS 5993 Thesis II

### ***Group II – NFS Electives and Additional Coursework: (2 hours)***

Coursework to be selected from additional courses above, other NFS program areas, coursework from another department, or coursework transferred from another institution with approval of the advisory committee.

**TOTAL PROGRAM HOURS: MINIMUM 30 HOURS**

### **Recommended Sequence of Classes:**

#### **Fall 1**

<b>Course</b>	<b>Credit Hours</b>
NFS 5023 Food Analysis	3
NFS 5003 Food Chemistry	3
Research tools course	3

#### **Spring 1**

<b>Course</b>	<b>Credit Hours</b>
NFS 5903.01 Special Topics (Flavor Technology)	3
NFS 5903. 03 Special Topics (Flavor Analysis)	3
NFS 5013 Sensory Evaluation of Food	3

#### **Summer 1**

<b>Course</b>	<b>Credit Hours</b>
NFS 5983 Thesis I	3

#### **Fall 2**

<b>Course</b>	<b>Credit Hours</b>
NFS 5963 Research	3
NFS 5913 Independent Study	3
NFS 5321 Seminar in Food Science	1

#### **Spring 2**

<b>Course</b>	<b>Credit Hours</b>
NFS 5993 Thesis II	3

<b>TOTAL HOURS:</b>	<b>31</b>
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**Note: The duration to degree completion may be longer or shorter than 2 years, which is dependent on students' progress on research project.**

## **SPECIAL REQUIREMENTS FOR THIS DEGREE**

### **Advisory Committee**

When a student is accepted into the Master of Science in Food Science and Flavor Chemistry Program, the Admission Committee Chair will assign an academic advisor. The academic advisor will be responsible for the student's program until a permanent academic advisor is selected.

During the first semester, the student will select an advisor of her/his choice and develop a plan of courses with the major advisor. Only graduate faculty members whose major faculty appointment (half time or more) is in the Department of NFS qualify to serve as academic advisors.

<https://twu.edu/nutrition-food-sciences/graduate-programs/ms-in-nutrition/>

### **Degree Plan**

Effective Fall 2018 master level students will no longer file paper degree plans but will submit degree audits through [Student Planning](#). The graduate student and the advisor share the responsibility of reviewing and updating any changes to the student's degree audit. (When the student presents a minor, a faculty member from the minor department must approve the proposed program and serve on the student's committee).

It often occurs that a degree plan will need to be changed or to include "elective" or "special topics". When this is the case, it is the student's responsibility to update the degree plan. The degree plan can be updated or modified by completing a Change in Degree Plan form (<https://twu.edu/gradschool/forms/>). The change in Degree Plan request should be submitted to the student's academic advisor for approval. If the modifications being requested are substantial, the academic advisor will discuss the request with all committee members before approving the change. The academic advisor will then send the form to the Dean of Graduate School.

### **Research competency**

Research competencies will be demonstrated through the successful completion of the graduate research methods, data process, and the production of a thesis.

### **Time limits**

No absolute time period exists, but credit hours older than six years cannot apply towards the master's degree. Under extraordinary circumstances, credit hours older than six years may be reinstated with the permission of the Dean of Graduate School upon recommendation of the student's advisory committee, and Dean of the College of Health Sciences.

### **Research Committee Policy**

The student need to enroll in Thesis I (NFS 5983) with permission of their research advisor. The student should recommend the members of the research committee and the research advisor approves the membership. The research committee consists of three, but not fewer than two, voting members of the graduate faculty from the student's degree program. If the student has a minor, an additional member of the committee should be a faculty member from the minor area. The research committee advises the student on the thesis process, reviews the thesis, participate at the student's defense of the thesis, and decides if the thesis is successfully defended. The research advisor leads the committee. While the thesis prefix is NFS, the interdisciplinary nature of the research will be insured by the constituency of the research committee and by the research topic itself.

## POLICIES AND PROCEDURES FOR THE DEVELOPMENT AND COMPLETION OF THESIS

### **Research Project Procedures**

Students completing a thesis must meet the requirements for NFS 5983 Thesis I (taken first) and NFS 5993 Thesis II (taken second). While enrolled in NFS 5983, the student develops and presents a prospectus to the research committee. The prospectus must be defended and approved prior to collecting data for the thesis project.

The prospectus should be sent to the research committee members at least **10-working days** prior to the defense of the prospectus.

An outline of the procedure to complete a prospectus is:

1. Consult with research chair regarding feasibility of the project and verify that all prerequisites for candidacy have been met.
2. Prepare a draft of the prospectus. The prospectus is a maximum 10-page document that includes a literature review, the relevance and purpose of the research project, specific aims, methodology, and statistical analysis. Submit the draft to the research chair for comments, suggestions for improvement, etc.
3. Submit the corrected draft to the research chair for approval.
4. After the research chair gives approval, the draft is submitted to all committee members by the student a **minimum of 10 working days prior** to prospectus or thesis meetings.
5. Schedule a prospectus meeting of the committee at which the draft is clarified and defended by the student. At least two members of the student's research committee must be present for the meeting to be official.
6. An approved IRB from the Institutional Review Board (IRB) if using human participants or Institutional Animal Care and Use Committee (IACUC) if using animals to conduct the research must be submitted to the student's research committee at the same time as the prospectus.
7. Secure letters of agreement from any non-university agency which will supply participants (schools, hospitals, etc.). Letters of agreement must accompany the prospectus.
8. Revise the tentative outline as suggested by the committee and reduce the length to a maximum of 10 pages, excluding references and appendices. Appendices include approval from IRB, IACUC, or letters of agreement.
9. Secure committee members' signatures of approval (Prospectus Cover Sheet at <https://twu.edu/gradschool/forms/> and forward two copies of prospectus to the Chair of NFS for approval and signature. The original signature sheet, letters of approval, and IRB or IACUC approval must be attached.
10. The student and chair of the student's research committee must file copies of the Responsible Conduct in Research Training with the prospectus to the Graduate School – see <https://www.twu.edu/institutional-review-board-irb/training-requirements/>
11. One copy of the prospectus for thesis is filed with the Dean of the Graduate School and the second with NFS.
12. The student enrolls in 5993 when the student is in the final stages of writing a thesis and presents the completed project to the research committee.

As soon as the student is notified of approval of the prospectus, collection of data may begin.



## **Format of Thesis\***

Each thesis should reflect the highest standards of research and scholarship and should make a meaningful contribution to the field of food science and flavor chemistry. Consequently, each thesis adheres to rigorous standards of content, style, and format. The student should write their thesis in the manuscript format as described below. The format for the title page and abstract for a thesis are found at the graduate website: <https://www.twu.edu/gradschool/forms/>.

A calendar of deadlines is available on the Graduate School website and lists graduation requirements and dates. Final dates for submitting the thesis CANNOT be waived for any reason (See Graduation Deadlines at <https://twu.edu/gradschool/current-students/degree-completion/>). Each candidate, not the research advisor, is responsible for meeting Graduate School requirements and deadlines. The Graduate School staff is available to answer questions or to clarify policies or procedures.

The proposed section headings follow the manuscript format used in the American Society of Nutrition Journals:

a. **Chapter I – INTRODUCTION**, will include the following:

- Title
- Introduction
- Problem Statement
- Hypothesis or Hypotheses
- Definitions
- Assumptions and Limitations
- Significance

b. **Chapter II – REVIEW OF THE LITERATURE**

This chapter should aim toward contrasting/comparing of similarities and differences in terms of the present study and completed literature.

c. **Chapter III - MANUSCRIPT TITLE**

- Disclosure stating if the paper is already published or will be published. Also reference Appendix if needed
  - Ex: The work described in this chapter in its entirety has been published in the following reference with minor modifications in numbering of figures: (citation)
  - Ex: Additional data that was not included in the submission is located in Appendix A.
- Abstract
- Introduction
- Methods
- Results
- Discussion

d. **Chapter IV – will be titled CONCLUSIONS** and include the following sections:

- Discussion – should be summary of what is in the manuscript(s)
- Conclusions – Overall conclusions from the research completed
- Implications and Recommendations

e. **Chapter V – REFERENCES**

Should be one comprehensive reference list for the whole document

## **f. APPENDICES –**

Created and used as needed. Contains additional information regarding methods or results

\* You should use one, uniform style for your thesis/dissertation, even if you will be submitting the sections to different journals with different reference requirements. See Departmental template for an example.

### **Preparation of Thesis**

- Submit the completed thesis to the research advisor for comments and suggestions per research advisor's schedule and instructions.
- Resubmit the corrected draft to research advisor until it is finally approved.
- After the research advisor has given approval, corrected thesis is submitted to other research committee members by the student.
- Student provides the corrected thesis to the research committee members at **least 10 working days** prior to the oral examination.
- Student schedules final oral examination with scheduling input from all committee members.

### **Final Oral Examination Procedures**

The student schedules a meeting for defense of the thesis after distributing the paper and at a time all members will be present. Two forms (Certification of Final Examination (Dissertation, Thesis, Professional Paper at <https://twu.edu/media/documents/graduate-school/Certificate-of-Completion-forThesis-&-Dissertation-2020.pdf>) are to be presented by the student at the time of final oral examination. At the conclusion of a satisfactory oral examination, the final examination certification form is digitally signed by all research committee members and is filed in the NFS office for the chair's signature. The chair of NFS will then send the form to the Dean of the Graduate School.

### **Thesis Defense Announcement**

The major professor and the student are responsible for sending information of the oral defense of the dissertation at least one week prior to the defense meeting for other interested faculty and students to attend. Defense information can be entered using this [google form](#) or by emailing Dr. LeMieux ([mlemieux@twu.edu](mailto:mlemieux@twu.edu)), If emailing, please make sure to include:

- Student's name and Credentials (if any)
- Advisor's name
- Graduate Program Name
- Thesis title
- Defense Date, time, and location
- Photo of student.

### **Final Thesis Filing Procedures**

The thesis must be prepared in accordance with regulations outlined on TWU Graduate School website (Please see <https://twu.edu/gradschool/current-students/thesis-and-dissertation/>)

Also, make an appointment with a Graduate Service Formatting Editor to ensure you have followed the proper formatting for filing a thesis. The research advisor may not forward the thesis unless a clearance has been obtained from the IRB or IACUC. To close an approved IRB study, all signed informed consents from human participants must be electronically submitted to the IRB and the Close Study Request Form is completed.

## **Guidelines for Publication Agreement**

The ethical standards written in Publication Manual of the American Psychological Association: Seventh Ed. will be used as guidelines for authorship, reporting and publishing the master's thesis. <https://apastyle.apa.org/products/publication-manual-7th-edition>

## **Graduation Policies**

Graduate students must be enrolled in Thesis II (NFS 5993) during the semester in which they graduate unless all requirements of the Graduate School are met prior to the first day of registration of the ensuing semester.

If a student fails to meet the deadline for graduation established by the Graduate School in a given semester but completed all requirements by the close of that semester, the Dean of the Graduate School will write a letter to the effect to the student's employer. The letter is tantamount to the awarding of the degree.

Students in the MS in Food Science and Flavor Chemistry Program who wish to graduate should be aware of the following:

1. NFS 5983 - Thesis I must be completed and approved one semester earlier before the thesis defense in the last semester.
2. If a member of the research committee is to be replaced because the faculty member will not be available, the request for change must be initiated by the research chair a semester earlier before the thesis defense.
3. The final defense must be held during the research chair's scheduled session.