Master's Programs

Department of Nutrition & Food Science

Admission to this program is contingent upon admission to the Graduate School. In addition students entering must have completed the Graduate Record Examination (GRE) and have a grade point average of at least 3.0. WSU's Graduate School requires applicants to have a GRE score of at least 1000 on the Verbal and Quantitative portions of the test, and a minimum of 3.0 on the Writing Assessment. The minimum TOEFL for international students is 550 (213 computer-based or 79/120 internet-based). However, most admitted applicants to the Department generally have higher scores. Your admission depends on several criteria including three letters of recommendation, academic transcripts, your personal statement, research and/or work experience and an interview (when possible).

Thirty-two credit hours are required for successful completion of the Master's program in Nutrition & Food Science and both a Master of Science degree (M.S.) and a Master of Arts degree (M.A.) are offered. The MA degree can have an emphasis in Food Service Management or be done in conjunction with a Graduate Certificate in Public Health

Prerequisites

All incoming students are expected to have the following undergraduate courses or their equivalent:

- NFS 2130/2140 Intro Food Science and Lab 4 cr.
- NFS 2220 Nutrition Laboratory 1 cr.
- NFS 3230 Human Nutrition 3 cr.
- BIO 2200 Intro Microbiology 4 cr.
- BIO 2870 Anatomy and Physiology
- One semester of Organic Chemistry
- Courses in biochemistry and statistics are recommended

Master's Degree Requirements: All Masters students must take the required component of courses (13 credit hours). Additional courses will depend on whether a M.S. or M.A. degree is sought. Since NFS 6000 Nutritional Biochemistry has an undergraduate biochemistry/metabolism prerequisite it is highly recommended that new students must have NFS 5130 Food Chemistry and NFS 5230 Nutrition and Metabolism (or their equivalent courses), prior to taking NFS6000.

M.S. Degree in Nutrition and Food Science (Plan A). Successful completion of 24 credit hours of course-work plus a Master's Thesis (NFS 8999, 8 credit hours). The course-work must include the Departmental required component of courses (13 credits) + NFS 7060 and NFS 7140. The thesis involves a minimum of one semester of full-time research. The M.S. is recommended for those interested in positions involving laboratory work or in pursuing a Ph.D. degree.
M.A. Degree in Nutrition and Food Science (Plan B). Successful completion of 29 credit hours of course-work plus a Master’s Essay (NFS 7999, 3 credit hours). The course-work must include the Departmental required component of courses (13 credit hours). The M.A. is suggested for those planning to be in non-laboratory aspects of nutrition or food service.

Required Component of Courses: (13 credit hours) for ALL Masters students

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>NFS 6000</td>
<td>Nutritional Biochemistry</td>
<td>3</td>
</tr>
<tr>
<td>NFS 6020</td>
<td>Nutrition Gene Interaction</td>
<td>3</td>
</tr>
<tr>
<td>NFS 6030</td>
<td>Microbiological Safety of Foods</td>
<td>3</td>
</tr>
<tr>
<td>NFS 7000</td>
<td>Nutritional Metabolomics and Bioinformatics</td>
<td>3</td>
</tr>
<tr>
<td>NFS 7230</td>
<td>Nutrition and Physical Performance</td>
<td>3</td>
</tr>
<tr>
<td>NFS 7850</td>
<td>Seminar/Journal Club</td>
<td>1</td>
</tr>
</tbody>
</table>

(And active participation as long as a student is in the graduate program)

Degree Requirements for the M.S. degree:

Required Component of Courses: 13 credit hours

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>NFS 7060</td>
<td>Research Problems in Nutrition &amp; Food Science</td>
<td>2</td>
</tr>
<tr>
<td>NFS 7140</td>
<td>Advanced Lab Techniques in Nutrition &amp; Food Science</td>
<td>4</td>
</tr>
<tr>
<td>NFS 8999</td>
<td>Master’s Thesis</td>
<td>8</td>
</tr>
</tbody>
</table>

Optional courses – any courses offered for graduate credit 5 credit hours

(see departmental web-site for complete listing of graduate courses)

For the M.A. degree:

Required Component of Courses: 13 credit hours

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>NFS 7999</td>
<td>Master’s Essay</td>
<td>3</td>
</tr>
</tbody>
</table>

Optional courses – any courses offered for graduate credit 16 credit hours

(See departmental web-site for complete listing of graduate courses)

Students desiring an M.A. in Nutrition and Food Science with an emphasis in Food Service Management will take a minimum of 6 hours in the School of Business Administration, to be selected from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BA 6010</td>
<td>Markets &amp; Marketing</td>
<td>2</td>
</tr>
<tr>
<td>BA 6020</td>
<td>Management Principles and Organizational Processes</td>
<td>2</td>
</tr>
<tr>
<td>BA 7040</td>
<td>Managing Organizational Behavior</td>
<td>3</td>
</tr>
<tr>
<td>BA 7070</td>
<td>Social Perspectives on the Business Enterprise</td>
<td>3</td>
</tr>
</tbody>
</table>
For the MA degree with a Graduate Certificate in Public Health:

**Required Component of Courses**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>NFS 7240</td>
<td>Nutritional Epidemiology</td>
<td>3</td>
</tr>
<tr>
<td>NFS 7999</td>
<td>Master’s Essay</td>
<td>3</td>
</tr>
</tbody>
</table>

In addition students must complete the following courses in the Department of Family Medicine and Public Health Sciences:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>FPH 7010</td>
<td>Seminar in Public Health</td>
<td>1</td>
</tr>
<tr>
<td>FPH 7015</td>
<td>Biostatistics</td>
<td>4</td>
</tr>
<tr>
<td>FPH 7240</td>
<td>Epidemiology</td>
<td>3</td>
</tr>
<tr>
<td>FPH 7420</td>
<td>Principles of Environmental Health</td>
<td>3</td>
</tr>
</tbody>
</table>

Optional courses – any courses offered for graduate credit 2 credit hours

Attendance at Departmental seminars is required for all graduate students.

**Dietetic Internship/Master’s Degree Program:** Students in Wayne State University are NOT eligible for this course option. Students accepted into an American Dietetic Association approved dietetic internship at other institutions in the Detroit area are invited to apply to pursue a Master’s program. Applicants admitted to the program may earn up to four (4) credit hours of supervised field experience (NFS 5992) in association with the dietetic internship experience. Grades for this course will be deferred until completion of a minimum of 8 credits of the required component of courses in the Department. In addition, upon approval of the academic advisor and the internship director, qualified students may pursue a directed study (NFS 7990) during an eight week residency program with emphasis on clinical nutrition, management, or community dietetics.

**Selection of an Advisor.** During the first semester in the program, admitted students will be advised by the NFS Graduate Officer or be assigned a temporary advisor. A permanent advisor will be selected by the student or recommended by the Graduate Officer as soon as the research interests of the student have been identified. For the M.S. thesis option, students must write and defend their research proposal, prior to starting the research. Students may not work under the supervision of an Adjunct Faculty in another Department, unless written authorization is granted by the Departmental Graduate Officer or Departmental Chair. A copy of the authorization must be attached to the student’s plan of work and filed with the Departmental Office. In addition, the student must have a NFS faculty member collaborate on the project.

**Grade Point Average (GPA).** Students are required to maintain a 3.0 grade point average in the entire program. A minimum “B” average is required for NFS 6000, 6020, 6030, 7000, and
7230. Students failing any of these courses (below B-) will be allowed to repeat them once. In addition Department policy allows for one C grade over the course of the entire program.

**Plan of Work.** Students are required to submit 3 copies of their Plan of Work after completing 8 credit hours. Failure to do so will result in a hold on their registration. Students should consult with the Graduate Officer or their Advisor in planning their course work.

**Theses and Essays.** The completion of a thesis or essay is required for the M.S. and M.A. degrees, respectively. The thesis or essay must show evidence of scholarly study and writing and be related to the student’s major. Students should consult their advisor regarding requirements for theses and essays.

**Final Master’s Examination.** A final oral examination is required of all M.S. and M.A. students. All M.S. students are required to present their thesis research before the degree is granted. Although encouraged, this presentation is optional for M.A. students. M.A. students, whose Master’s essay has been approved by their advisor and who have maintained a GPA of 3.5 or above in their graduate work, are eligible for a waiver of the Master’s oral examination. For departmental seminars graduate students are expected to attend.

**AGRADE – Accelerated Graduate Enrollment:** Qualified senior undergraduates in the Department of NFS having a GPA of not less than 3.5 may enroll simultaneously in the undergraduate and graduate program and apply a maximum of fifteen credits towards both the bachelor and master’s degrees in Nutrition and Food Science. Students may apply for the program as soon as they complete ninety credit hours towards the undergraduate degree. Graduate courses taken as part of the AGRADE program are assessed undergraduate tuition rate. All application materials should be sent to the department address.

**Nutrition and Food Science Courses (NFS).** The following courses numbered 5000-9999 are offered for graduate credit. B – offered in alternate years, I – offered irregularly, F – offered in Fall semester, S – offered Spring/Summer, W – offered winter semester, Y – offered at least once every academic year (F or W, not in S). See also Graduate Bulletin and NFS web-site for the latest information.

**5130 Food Chemistry. Cr. 3**  
Prereq: NFS 2130 or equiv., CHM 2220. Study of the chemical constituents of foods, their relationship to the biological and physical properties, and overall food quality. (F,W)

**5140 Laboratory Techniques in Nutrition and Food Science. Cr. 3**  
Prereq: NFS 2130 and NFS 3230 or equiv.; CHM 2220 or equiv. Basic modern and classical analytical techniques and instruments in nutrition and food science. Background theory to principles of instrumental assays. Procedures for evaluation of macro and micro food components analysis. Physiological functions relevant to nutrition. Material Fee as indicated in the Schedule of Classes. (F,S)
5160 Functional Foods for Health. Cr. 3
Prereq: NFS 2030, NFS 2130, and NFS 3230. Introduction to functional foods (those with specific health benefits) and nutraceuticals, as well as a variety of functional food ingredients and extracts, their chemical and potential health promoting properties, processing, production, safety and regulation. (W)

5200 Advanced Dietetics. Cr. 3
Prereq: NFS 5230, 5250 with grades of C- or above. Open only to students in coordinated dietetics program. Development and refinement of dietetic practitioner skills through applications in critical care and specialty practice areas and in community agencies; theoretical basis for individual counseling and group process. Material Fee as indicated in the Schedule of Classes. (F)

5220 Community Nutrition. Cr. 2
Prereq: NFS 2130, NFS 2140, and NFS 3230 with grades of C-minus or above. Introduction to management of nutritional care in healthy and at-risk persons throughout the lifespan. Identifying problems and planning interventions to meet population nutritional problems and to reduce nutrition-related health risks in community settings. Community assessment; organization and function of community agencies; interventions appropriate to small and large groups, including nutrition education. (F,F)

5230 Nutrition and Metabolism. Cr. 3
Prereq: NFS 3230 with grades of C+ or above. The physio-biochemical properties of nutrients and their bionutritional interrelationships at the cellular and sub-cellular level. Carbohydrate, protein, and lipid metabolism and the role of vitamins and minerals in these metabolic processes. (F,S)

5250 Nutrition and Disease. Cr. 4
Prereq: NFS 5230. Application of the principles of biochemistry and physiology in the study of nutrient metabolism as altered by disease. The physio-biochemical basis for diet in the treatment of disease. May include some field experiences or clinical assignments. Units on team approach to patient care also included. (W)

5350 Organization and Management of Food Service Systems. Cr. 4
Prereq: NFS 2130, 2140, 3230. Survey of food service systems; factors affecting their successful operation. Components of quality assurance supporting well-being of target markets. Identification of operative management skills. (F)

5360 Management of Nutritional Care and Services. Cr. 3
Prereq: NFS 5200; coreq: NFS 4220. Recommended for students in coordinated dietetics program. Application of management theory and principles in the three areas of dietetic practice; career planning and professional role development. (W)

5992 Supervised Field Experience. Cr. 2-4
Prereq: consent of instructor. Supervised field experience designed to correlate classroom theory with practical work. (T)

**6000 Nutritional Biochemistry. Cr. 3**
Open only to graduate students. Prereq: one upper-level undergraduate biochemistry/metabolism course (e.g. NFS 5230). Biochemical effects of nutrients at cellular and organ levels. (F)

**6020 Nutrient and Gene Interaction. Cr. 3**
Prereq: NFS 5230, NFS 5130, and NFS 5140, or equiv. Open only to graduate students. Introduction to molecular genetics concepts, terminology and molecular methodologies, with emphasis on nutrition and food science. Overview of nutrition and gene interaction in onset and progression of disease, cancer, and aging. (B)

**6030 Microbiological Safety of Foods. Cr. 3**
Prereq: NFS 4150 and NFS 5130. Foodborne microorganisms as causes of human illnesses, including bacteria, mold, viruses and parasites. Microbial toxins and their mode of action. Antimicrobial agents in food. Means of prevention and protection. (F)

**6210 Nutrition through the Life Cycle. Cr. 3**
Prereq: graduate standing; NFS 5230. Biological growth and nutritional requirements from fetal stages of development through aging. Nutritional standards in light of current epidemiological data and scientific research. (I)

**6230 Nutrition and Physical Performance. (NFS 7230) Cr. 3**
Prereq: NFS 5230 or equiv. How nutrients affect physical fitness and physical performance; how physical performance can be improved by adopting optimal dietary practice and how exercise and optimal nutrition can prevent human diseases. (I)

**6270 Eating Behavior and Body Weight Regulation. (PSY 6270) Cr. 3**
Prereq: BIO 2870. Central and peripheral regulation of food intake, normal and abnormal eating behavior, physiological and psychological regulation of body weight, different models of obesity, etiology of treatment of obesity. (W)

**6280 Physiology and Nutrition. Cr. 4**
Open only to middle- or high-school teachers. Prereq: teaching certificate; mathematics through algebra. Physiological processes and nutritional basis for health and disease. (S)

**6850 (WI) Controversial Issues. Cr. 2**
Prereq: NFS 5230; consent of instructor; senior standing. Open only to Nutrition and Food Science majors. Topics to be announced in Schedule of Classes. (F)

**6860 (WI) Controversial Issues in Clinical Nutrition: Dietetics. Cr. 2**
Prereq: NFS 5230. Open only to dietetics post bachelor certificate and dietetics B.S. students. Current controversial topics; differing points of view will be debated; discussion of modes of communication of nutrition information. (W)

7000 Nutritional Metabolomics and Bioinformatics. Cr. 3
Prereq: NFS 6000, STA 1020. Introduction to and application of the "omics" technologies to nutrition: genomics, proteomics, and metabolomics. Examples and exercises using bioinformatic software for multivariate data analyses. Material Fee indicated in the Schedule of Classes.. (W)

7060 Research Problems in Nutrition and Food Science. Cr. 2
Prereq: consent of instructor. Research orientation: acquaintance with published data, principles of design, methods of collecting data, and basic statistical analysis. (B)

7140 Advanced Laboratory Techniques in Nutrition and Food Science. Cr. 0-4
Prereq: graduate standing; BMB 5010 or CHM 5600 or equiv.; NFS 5140. Laboratory techniques in nutrition and food science research, including: animal experimentation, isotope use and quantitation, radioimmunoassay and receptor assays, atomic absorption; chromatography; microbial assays. Material Fee as indicated in the Schedule of Classes. (Y)

7230 (NFS 6230) Nutrition and Physical Performance. Cr. 3
Prereq: NFS 5230 or equiv. How nutrients affect physical fitness and physical performance; how physical performance can be improved by adopting optimal dietary practice and how exercise and optimal nutrition can prevent human diseases. (F)

7240 Nutritional Epidemiology. Cr. 3
Prereq: graduate standing and NFS 3230 or former NFS 2210 or equiv., or consent of instructor. Introduction to epidemiology concepts and terminology. Emphasis on examining the associations between nutrition and chronic disease. (I)

7850 Graduate Seminar. Cr. 1
Offered for S and U grades only. Prereq: consent of instructor. Presentations by graduate students, graduate faculty, and visiting scientists. (F,W)

7890 Advanced Workshop. Cr. 2-4 (Max. 8)
Application of theoretical principles to selected areas of nutrition and food science. Topics and prerequisites to be announced in Schedule of Classes. (I)

7990 Directed Study. Cr. 1-4 (Max. 4)
Prereq: consent of advisor and instructor. Offered for each area of specialization. (T)

7991 Lab Rotation. Cr. 1
Offered for S and U grades only. For new graduate students; students spend at least two weeks in all active research labs. (T)
7996 Research. Cr. 1-8 (M.S.: MAX 6; PH.D.: MAX 20)
Prereq: consent of advisor. Offered for S and U grades only. (T)

7999 Master’s Essay Direction. Cr. 1-3 (Max. 3)
Prereq: consent of advisor. Offered for S and U grades only. (T)

8999 Master’s Thesis Research and Direction. Cr. 1-8 (8 req.)
Prereq: consent of advisor. Offered for S and U grades only. (T)

9990 Pre-Doctoral Candidacy Research. Cr. 1-8 (Max. 12)
Prereq: Consent of department and approval by the Ph.D. Officer of the Graduate School. Offered for S and U grades only. Research in preparation for doctoral dissertation. (T)

9991 Doctoral Candidate Status I: Dissertation Research and Direction. Cr. 7.5
Prereq: Ph.D. candidate in department and approval by the Ph.D. Officer of the Graduate School. Required in academic-year semester following advancement to Ph.D. candidacy. Offered for S and U grades only. (T)

9992 Doctoral Candidate Status II: Dissertation Research and Direction. Cr. 7.5
Prereq: NFS 9991 and approval by the Ph.D. Officer of the Graduate School. Required in academic-year semester following NFS 9991. Offered for S and U grades only. (T)

9993 Doctoral Candidate Status III: Dissertation Research and Direction. Cr. 7.5
Prereq: NFS 9992 and approval by the Ph.D. Officer of the Graduate School. Required in academic-year semester following NFS 9992. Offered for S and U grades only. (T)

9994 Doctoral Candidate Status IV: Dissertation Research and Direction. Cr. 7.5
Prereq: NFS 9993 and approval by the Ph.D. Officer of the Graduate School. Required in academic-year semester following NFS 9993. Offered for S and U grades only. (T)

9995 Candidate Maintenance Status: Doctoral Dissertation Research and Direction. Cr. 0
Prereq: Approval by the Ph.D. Officer of the Graduate School; completion of 30 credits in NFS 9991- NFS 9994. Offered for S and U grades only. (T)