

GRADUATE CENTER FOR NUTRITIONAL SCIENCES

Fall 2009 Multidisciplinary M. S. Program in Nutritional Sciences

This handbook is a guide for M.S. students in Nutritional Sciences, their academic advisors and other faculty members. The handbook provides an overview of the requirements and processes, degree and curriculum requirements, references and links to forms that need to be completed, Graduate School and other valuable information. For addition information, please consult the Center's

Website <http://www.mc.uky.edu/Nutrisci/>

Welcome to New Graduate Students

The Graduate Center for Nutritional Sciences hopes your graduate years will be enjoyable and rewarding. The challenges you will face will create a sound research and applied skills foundation and help make your future years productive and successful. The information in this handbook is intended to serve as a guide for your matriculation through our graduate program. Students should familiarize themselves with the information provided herein.

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The Center's Mission

The University of Kentucky's Graduate Center for Nutritional Sciences is an interdisciplinary program that provides high-quality educational training and research experience across a wide spectrum of nutrition-related subjects. The Center's mission is to train highly skilled nutritional scientists equipped to tackle critical nutrition-related disease and health issues and pursue promising careers in academic, industrial and professional environments in the rapidly expanding field of nutritional sciences.

Program Overview

The Graduate Center for Nutritional Sciences was established in 1989 to provide an opportunity for advanced multidisciplinary graduate studies in nutrition. Through its Ph.D. and Master's of Science programs, the Center enables students to explore the interrelationship between environmental factors and nutrients and their effect on biochemistry, physiology and disease development. Students have access to faculty expertise across 28 departments and divisions at the University's Colleges of Medicine, Pharmacy, Health Sciences and Agriculture as well as the Colleges of Arts and Sciences and Education. Administratively, the Center is housed in the College of Medicine.

One of the Center's primary areas of research and training targets nutrition and chronic diseases, with a focus on obesity and associated disorders of cardiovascular disease, diabetes and cancer. Other areas of specialty include nutrition and oxidative stress, clinical nutrition and agricultural nutrition.

More than 60 faculty members provide teaching and individualized research guidance for graduate students in academic units including Plant Sciences; Animal Sciences; Anthropology; Behavioral Science; Biochemistry; Clinical Sciences; Horticulture and Landscape Architecture; Internal Medicine; Kinesiology and Health Promotion; Microbiology and Immunology; Neurology; Nutrition and Food Science; Oral Health Science; Pathology and Laboratory Medicine; Pharmacy; Physiology; Psychiatry; Surgery; and Toxicology.

Research Opportunities and Resources

Approximately 36,000 square feet of new laboratory space have been dedicated to the Center. This research space houses state-of-the-art equipment for cell culture, human and animal studies using state-of-the-art trace mineral, vitamin, lipid, amino acid, hormone, enzyme, stable and radioactive isotope, microcirculatory, energy assessment, electrophoresis and molecular biology technologies. The University of Kentucky has in place multiple core facilities, among them a microarray facility as well as cores for electron microscopy, confocal microscopy, flow cytometry and magnetic resonance imaging.

Clinical research facilities for training and research, all within walking distance of each other, include the University of Kentucky Hospital, the Veterans Administration Hospital, Sanders-Brown Center on Aging, the Gill Heart Institute, the University of Kentucky Medical Center Outpatient Clinics, and the Markey Cancer Center. Both the UK Medical Center and the VA Medical Center

have clinical research units with ongoing nutritional studies. Opportunities for community-based research exist locally, throughout the state and in international settings.

The University's W.T. Young Library offers more than 2 million volumes and 13 branch libraries. Two of these libraries are of particular value to students in Nutritional Sciences: the Agriculture Library, located in the Agricultural Science Center North, and the Medical Library, located in the Medical Center. More information can be obtained by referring to the Graduate School Bulletin or calling the appropriate library.

The Master's of Science Program

I. Admissions

Admission Requirements

Admission to the Graduate School and the Graduate Center for Nutritional Sciences requires:

1. A baccalaureate degree from a fully accredited institution of higher learning.
2. A minimum undergraduate grade point average of 2.9 and 3.0 on all graduate work.
3. An average GRE score on the verbal, quantitative and analytical sections greater than the 30th percentile.
4. For international applicants, a minimum score of 550 on the paper-based TOEFL (maximum 667) and a minimum score of 213 on the computer-based TOEFL (maximum 300); all applicants must demonstrate proficiency in verbal and written English.
5. Admission to M.S. in Nutritional Sciences with Clinical Nutrition Emphasis is limited to those with a B.S. in Dietetics or Nutrition.

Admissions Process

Applicants for the M.S. program must:

1. Apply for admission to the Graduate School by completing the application form found at www.research.uky.edu/gsl
2. Apply for admission to the Graduate Center for Nutritional Sciences by sending hard-copy versions of the following documents to the Director of Graduate Studies (DGS).
3. A brief essay, no longer than two single-spaced pages, describing long-term career goals and how the M.S. Program in Nutritional Sciences would advance these goals.
 - a. Three letters of recommendation
 - b. Curriculum vitae
 - c. Copy of Transcripts
 - d. Optional: *Research Assistantship Application Form* (see below)

Research Assistantships and Laboratory Rotations

- Applicants who have been accepted into the M.S. program and have elected the thesis option (Plan A) also can apply for a Research Assistantship with individual faculty. These are allocated on a very competitive basis.
- Interested applicants should submit with their other application materials a completed *Research Assistantship Application Form* (request from the DGS) to the Center's DGS by the application deadline listed below.

Application Deadlines

1. Application deadlines for Graduate School admission are as follows:

Domestic

- 30 days before the beginning of each semester

International

- February 1 for Fall admission
- June 15 for Spring admission
- October 31 for Summer admission

2. Application deadlines for the M.S. program at the Graduate Center for Nutritional Sciences:

- March 15 for Fall admission
- October 1 for Spring admission

State Residency Requirements

- The University of Kentucky and all other state-supported institutions of higher education assess tuition fees based on Kentucky or non-Kentucky residency. The Commonwealth of Kentucky Council on Post-Secondary Education establishes the policy determining residency.
- Students unsure of their residency status should check with the UK Registrar's Office (<http://www.research.uky.edu/gsbulletin/bull9800/respol.html>).

Financial Aid

- The UK Office of Student Financial Aid assists students in procuring work-study opportunity and loans: <http://www.uky.edu/FinancialAid/> .
- Awards for study also are available on a competitive basis through the Graduate School <http://www.research.uky.edu/gsfellowship/fellowassist.html>
- In addition, Research Assistantships are available through the Center and/or individual investigators on a contractual basis.

Housing

- The UK Housing Office operates and assigns apartments at six different locations to accommodate full-time graduate students and their families.
- Efficiency, one-bedroom, and two-bedroom apartments are available. They range in price from \$458 to \$718 per month, depending on size and location.
- An application must be filed with the Housing Office along with a reservation/security deposit.
- Assignments are made according to the date the application is received.
- See the Graduate School Bulletin for further details or contact the Housing Office: <http://www.uky.edu/AuxServ/housing.html>.
- Many students live in conveniently located off-campus housing, with one-bedroom apartments renting from \$400 to \$450 per month and two-bedroom apartments renting from \$485 to \$550 per month.

II Degree Requirements

General Graduate School Requirements

The M.S. in Nutritional Sciences will be conferred upon a candidate who has completed either a thesis ("Plan A") or non-thesis ("Plan B") program option. Both options require satisfactory completion of all required course work and passing an oral comprehensive exam.

All related Graduate School Forms can be found at <http://www.research.uky.edu/gs/gsforms.html>

Advisor and Advisory Committee

Candidates for the M.S. degree will be guided in their studies and research by the Director of Graduate Studies (DGS) and a Major Professor/Research Advisor who is a member of the Nutritional Sciences faculty. The DGS will serve as the Advisor if no faculty advisor is initially selected.

- The Committee for the Final Oral Examination or thesis defense should be selected at least three months prior to the scheduled exam date.
- The Committee should consist of three Graduate Faculty members from the Graduate Center for Nutritional Sciences.
- The DGS will submit the form for the *Final Oral Examination* request to the Graduate School (<http://www.research.uky.edu/gs/FinalExamRecomm.pdf>).

Degree Requirements

1. **Plan A:** M.S. students who have selected this option are required to:
 - a. Register for one (1) credit hour of seminar to present thesis research (NS 771-001) and zero credit for two semesters (NS 771-002). Students may also take additional credit hours in research (NS 790).
 - b. Complete the residency requirement (NS 768, see below).
 - c. Submit a research thesis.
 - d. Pass the oral final exam.
1. **Plan B:** Students who have selected this option are required to:
 - a. Register for zero credit hours for 2 semesters of seminar (NS 771-002).
 - b. Pass an oral final exam.

Residency Requirements for M.S. Students with "Plan A"

Each student must earn 6 credit hours of residency credit (NS 768) at the University of Kentucky.

Registration in NS 748 (0 credits)

Registration in NS 748 is limited to Plan A master's students who have completed all course requirements and have taken 6 credit hours of NS 768 (see above). Registration in NS 748 guarantees that a student is considered to be in full-time status for the purposes of student financial aid and loan deferments. The DGS must certify that the student is working at least half-time (i.e., 20 hours per week) on the thesis. Registration in 748 is limited to a maximum of six semesters (not counting summer terms).

Research Integrity

- All biomedical research at the Graduate Center for Nutritional Sciences follows strict federal and state mandates concerning research protocols, use of laboratory animals and research involving human subjects.
- The Office of Research Integrity (ORI) both supervises and monitors adherence to these mandates.
- The ORI also supports the institution in promoting ethical conduct of research and educating UK students and employees regarding research misconduct regulations.

Honor Code/Plagiarism

- Pursuit of a graduate program at the Graduate Center for Nutritional Sciences constitutes an agreement to adhere to high standards of honesty and ethical behavior.
- Cheating, plagiarism, and any scientific misconduct such as falsification of data or deliberate misuse of equipment will be reviewed by the Graduate Program Committee and are causes for dismissal from the program.
- Procedures outlined in the UK Student Code will be adhered to with respect to a charge of misconduct.

Evaluation of Academic Performance (Termination of a Student)

- Student progress will be monitored periodically by the DGS and reviewed by the Graduate Program Committee.
- Students must maintain a semester GPA of at least 3.0 in all coursework, satisfactory performance in lab rotations, satisfactory participation in seminars, and adherence to the rules and procedures described in this handbook.
- Students who fall below a 3.0 GPA in any one semester will be evaluated on an individual basis by the Graduate Program Committee for placement on probation, with the possibility of dismissal.
- Graduate students in a Research Assistant (RA) position must adhere to the contract of this position as defined in the GSAS form. If documentation demonstrates that conditions of the position are not met, then the RA contract may be terminated, pending final approval by the Center Director.

Communication Skills

- The development of good communication skills is an important part of graduate education. These skills are improved through a wide range of activities including seminar courses; journal clubs; teaching experiences; writing of manuscripts, research proposals, grants and the final dissertation; and presentations at local, regional and national meetings.
- Proficiency in English is required of all graduate students in the Graduate Center for Nutritional Sciences. English as a Second Language classes are available to the Center's students. Please contact the DGS for further information.

Projected Average Timetable for Completing the Proposed M.S. Requirements

- Course work and research: 2 to 3 years.

Holiday/Vacation for Students

- Students on Research Assistantships can take two weeks of vacation per year in addition to holidays approved for all staff at the University of Kentucky.
- Spring Break is **not** a break for students on assistantships; the Christmas/New Year holiday usually falls between December 25th and January 1st).
- Effective communication between students and their advisors before vacation times is in everyone's best interest.

Final Examination for M.S. Candidate

- Plan A: An oral exam covering course material and thesis data.
- Plan B: A comprehensive oral exam.
- At least two weeks prior to scheduling the exam, the DGS will submit to the Graduate School the *Final Examination Recommendation* form (<http://www.research.uky.edu/gS/FinalExamRecomm.pdf>).

Application for Degree

An *Application for Degree* (<http://www.research.uky.edu/gS/GSDegreeCard.pdf>) must be filed with the Graduate School **within 30 days** after the beginning of the semester that the student expects to complete his or her work.

Nutritional Sciences Graduate Program

Overview of the courses for Master's in Nutritional Sciences

Core Courses for MS NS Total credits required for degree (30)

Prerequisites-200 level or equivalent physiology course. Recommended but not required is a 400 level biochemistry course

NS/CNU 601	Integrated Nutritional Sciences Part I	(3)
NS/ASC/CNU 602	Integrated Nutritional Sciences Part II	(3)
NS/CNU/FCS	Integrated Nutritional Sciences Part III	(1)
NS/CNU/NFS704	Current Topics	(1)
STA 570	Basic Statistical Analysis	(4)
NS 771	Seminar in Nutritional Sciences	(0-1**)
NS/CNU/NFS 782	Special Problems	(1-6*)
NS/CNU 609	Ethics	(1)

Core Credits = 15

*Plan B Only

**Plan A Only

Courses for Emphasis in Clinical Nutrition

Prerequisite- B.S. in Dietetics and/or meeting ADA in Dietetics requirements for internship

EDP 605	Counseling Techniques	(3)
NS/CNU 702	Clinical Nutrition Problem Based Case Studies	(1-3)
CNU 611	Advanced Medical Nutrition Therapy	(2)
CNU 612	Examination Skills for the Clinical Nutritionist	(2)

Emphasis Credits = 8-10

Electives to equal a minimum of 30 credit hours

Courses for Emphasis in Wellness and Sports Nutrition

NS/CNU	Wellness and Sports Nutrition	(3)
EDP 605	Counseling Techniques	(3)
KHP 600	Exercise Stress Testing and Prescription	(3)
KHP 620	Advanced Exercise Physiology	(3)
CNU 501	Nutraceuticals and Functional Foods	(2)

Emphasis credits = 14

Electives to equal a minimum of 30 credit hours

Courses for Emphasis in Community Nutrition

CPH 605	Epidemiology	(3)
NS/NFS 630	Advanced Community Nutrition	(3)
EDP 605	Counseling Techniques	(3)
NFS 603	Advanced Community Program Development	(3)
NFS 607	Food Related Behaviors	(3)

Emphasis credits= 15

Electives to equal a minimum of 30 credit hours

Courses for Emphasis in Molecular and Biochemical Nutrition

BCH 607(IFS 601) Biochemistry or CHE 550 (3)

BCH 608 (IFS 602) Biochemistry or CHE 552 (3)

NS/CNU 606 Molecular Biology Applications in Nutrition (2)

Emphasis Credits= 8

Electives to equal a minimum of 30 credit hours

Electives

The student must successfully complete a minimum of 6 credit hours in electives. Elective courses are recommended by the DGS and/or the Advisor.

Suggested elective courses include:

NS/NFS 607	Food-Related Behaviors	3 credits
NS/NFS 640	Human Nutrition: Assessment	2 credits
NS/CNU 606	Molecular Biology Applications in Nutrition	2 credits
NS 790	Research in Nutritional Sciences (before qualifying exam)	1-6 credits
CNU 501	Nutraceuticals and Functional Foods in Health and Disease Prevention	2 credits
CNU/NS 604	Lipid Metabolism	3 credits
CNU/NS 608	Nutritional Immunology	3 credits
CNU/NS 605	Wellness and Sports Nutrition	3 credits
CNU/NS 702	Problem-Based Case Studies	1-5 credits
ASC 681	Energy Metabolism	3 credits
ASC 683	Protein metabolism	3 credits
ASC 689	Physiology of Nutrient Digestion/Absorption	3 credits
ASC 684	Advanced Ruminant Nutrition	3 credits
ASC 686	Advanced Non-ruminant Nutrition	3 credits
FSC 638	Food Proteins	3 credits
FSC 640	Food Lipids	3 credits
FSC 434G	Food Chemistry	4 credits
BCH 610	Biochemistry of Lipids and Membranes	3 credits
BCH/BIO/MI 615	Molecular Biology	3 credits
CPH 605/PM 620	Epidemiology	3 credits
CPH 645	Food Systems, Malnutrition and Public Health	3 credits
EDP 661	Counseling Techniques II	3 credits
GS 610	College Teaching	3 credits
KHP 420G	Physiology of Exercise	3 credits
KHP 621	Advanced Exercise Physiology	3 credits
KHP 621	Exercise and Coronary Heart Disease	3 credits
KHP 720	Sport Medicine	3 credits
KHP 781	Theory and Methodology of Body Composition Assessment	3 credits
MI 685	Advanced Immunology	3 credits
MI 710	Molecular Cell Biology	3 credits
PGY 604	Advanced Cardiovascular Physiology	3 credits
PGY 607	Hormonal Control Mechanisms	3 credits