

HANDBOOK
GRADUATE CENTER FOR NUTRITIONAL SCIENCES

Multidisciplinary Ph.D. and M.S. Programs in Nutritional Sciences

University of Kentucky

Fall 2005

This handbook is a guide for students of the Ph.D. and Master's of Science programs in Nutritional Sciences, their academic advisors and other faculty members. The handbook provides an overview of the two programs, the admissions requirements and process, degree and curriculum requirements, and references and links to forms that need to be completed, Graduate School resources and other valuable information.

For additional information, please consult the Center's Website
<http://www.mc.uky.edu/nutrisci/msprogram.html> or contact:

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Introduction

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 nutritional sciences field.

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 reports to the University of Kentucky Graduate School.

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 Ph.D. Program

I. Admissions

Admission Requirements

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

1. An M.S. Degree with a GPA of 3.2 or above on a 4.0 scale, or a B.S. Degree with a GPA of 3.0 or above on a 4.0 scale.
2. An average GRE score on the verbal, quantitative and analytical sections that is greater than the 50th percentile.
3. 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.

Admissions Process

Applicants for the Ph.D. program are required to:

1. Apply for admission to the Graduate School by completing the application form available at <http://www.research.uky.edu/gs/>.
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):
 - a. A brief essay, no longer than two single-spaced pages, describing long-term career goals and how the Ph.D. Program in Nutritional Sciences would advance these goals.
 - b. Three letters of recommendation
 - c. Curriculum vitae
 - d. A completed *Research Assistantship Application Form* available at <http://www2.mc.uky.edu/nutrisci/forms.html>

Application Deadlines

- Application deadlines for Graduate School admission:
 - 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
- Application deadlines for the Graduate Center for Nutritional Sciences:
 - March 15 for Fall admission
 - October 1 for Spring admission

Research Assistantships and Laboratory Rotations

- Ph.D. applicants are required to apply for a Research Assistantship, which represents an integral part of the Ph.D. program.
- Applicants accepted into the Ph.D. program also may apply to participate in a Laboratory Rotation Program. This program enables students to work four to six months in as many as three laboratories before selecting their Advisor. Applicants are accepted on a first come, first served basis.

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 Graduate Center for Nutritional Sciences 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.htm>)
- 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 Guidelines

General Graduate School Requirements

The Ph.D. degree will be conferred on a candidate who has:

1. Completed all required course work
2. Passed a comprehensive qualifying examination in nutritional sciences as well as the dissertation project
3. Presented a satisfactory dissertation
4. Passed a final oral examination
5. Shows evidence of creative scholarly attainment

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

Advisor and Advisory Committee

1. The Director of Graduate Studies (DGS) and a Ph.D. Thesis Advisor who is a member of the Nutritional Sciences faculty will guide Ph.D. candidates in their studies. The DGS will serve as the Thesis Advisor if no faculty advisor is initially selected.
 - a. The Advisor is the appointed Chair of the Advisory Committee and the primary contact in all matters pertaining to the graduate studies.
 - b. The Ph.D. student, in consultation with the Advisor, must prepare a curriculum proposal before the beginning of the third semester. The Advisor will then forward the proposal to the Committee members for approval.
 - c. Upon Committee approval, the Advisor will complete the *Curriculum Form* (**Appendix B**) and submit it to the DGS for review and final approval.
2. The Advisory Committee is an advising and program planning entity involved in the administration of the Qualifying Examination, supervision of the preparation of the dissertation, and the administration of the Final Oral Examination on the dissertation.
 - a. The Advisory Committee should be formed prior to the completion of 18 credit hours of graduate work and at least one year prior to the Qualifying Examination.
 - b. The Advisory Committee consists of at least four members, all of whom must be members of the Graduate Faculty. The majority of the members must be full members of the Graduate Faculty.
 - c. The Chair and two other members of the Advisory Committee must be from the Graduate Center for Nutritional Sciences, and at least one representative must be from outside the Center.
 - d. The Advisor and Advisory Committee are appointed by the Graduate School Dean upon receiving the *Advisory Committee Request* form from the DGS. (<http://www.research.uky.edu/gs/AdvisoryCommittee.pdf>).

Ph.D. Degree Requirements

1. Ph.D. students must sign up for a total of 2 credit hours of NS 771-001 and present two seminars **prior to the Qualifying Examination** – one unrelated to their research, the other related to the research topic of their dissertation.
2. Ph.D. students are required to present their dissertation in an open seminar prior to its defense.
3. In addition to these curriculum requirements, attendance in Seminars is mandatory for all students in residence at the University. These students should sign up for NS 771-002 (zero (0) credit hour).
4. All Ph.D. students must complete residency requirements as explained under “Residency Requirements” (NS 769), complete a dissertation and pass an oral final examination.

Manuscript Preparation

Students must complete an appropriate number of manuscripts, as determined by the Advisory Committee, for publication in referred journals within six (6) months of completion of their degree. The material will be based on their dissertation research.

1. The student will be the first author on these manuscripts.
2. Students must include the "Graduate Center for Nutritional Sciences" as the unit affiliation when they prepare a manuscript for publication.

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 Ph.D. Requirements

Students with B.S. Degrees:

- Course work: Years 1 and 2
- Qualifying Examination: Beginning of year 3
- Dissertation proposal submission: Middle of year 3
- Dissertation research: Years 1 through 4
- Oral Final Examination: Year 5

Students with M.S. Degrees:

- Course work: Year 1
- Qualifying Examination: Beginning of year 2
- Dissertation proposal submission: Middle of year 2
- Dissertation research: Years 1 through 3
- Oral Final Examination: Year 4

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.

Research Presentations

Students are encouraged to present research data at national/international professional meetings such as annual meetings organized by the Federation of American Societies for Experimental Biology (FASEB), American Association for Cancer Research, American Heart Association, Society for Free Radical Biology and Medicine, American College of Nutrition, American Dietetics Association and Institute of Food Technologists. These meetings provide an opportunity to interact with peers, faculty and others with common interests.

1. Students must acknowledge the "Graduate Center for Nutritional Sciences" as their affiliation when presenting a paper with slides or a poster.
2. Students must submit an application to the Graduate School to obtain travel support.

Student Travel Support Requirements

1. Support for travel to professional meetings will be provided only when a research paper is to be presented. An application must be completed and accompanied by the following documents:
 - a. An abstract of the paper to be presented.
 - b. A copy of the invitation to present or a program confirmation card (a copy of the meeting program with the student's name listed as a presenter).
 - c. An itemized budget of expenses.
2. The Graduate School has established monthly deadlines for the submission of applications requesting travel support.
 - a. Deadlines and the *Student Support Travel* form can be found at <http://www.research.uky.edu/gsfellowship/studentsupport.html>.

- b. The Graduate School will fund expenses covering no more than three days. Mere attendance at professional meetings will not be supported.

Teaching Experience

1. Students are encouraged to attend the Annual Teaching Assistant Orientation Workshop sponsored by the Graduate School each fall.
2. Students also are encouraged to take courses addressing teaching and learning issues in the college classroom, prepare them for academic careers and enhance their teaching skills:
 - GS 610 College Teaching (1)
 - GS 650 Preparing Future Faculty (1)

Residency Requirements for Ph.D. Students

Students must complete the equivalent of two years of residency prior to the qualifying examination and one year of post-qualifying residency.

Pre-Qualifying Residency:

1. Doctoral students must satisfy **one year** of "full-time" residency. Three models for satisfying this requirement have been approved by the Graduate Council. Model I is valid for all programs. Model II has been approved by the Nutritional Sciences graduate faculty. The approved residency models are listed by program in the *Graduate School Bulletin* (<http://www.research.uky.edu/gb/bulletin/bullinfo.shtml>)
 - Model I: Complete two consecutive semesters enrolled for 9 or more graduate credits per semester.
 - Model II: Complete three consecutive semesters enrolled for 6 or more graduate credits per semester.
2. Students who hold a master's degree from UK in the same discipline and have completed the full-time residency requirements while pursuing that degree may apply those semesters to satisfy the above requirement. In addition, students must complete a second year of residency in one or a combination of the following:
 - a. Transfer residency credit from an awarded M.S. degree from another accredited institution. This requires a letter from the DGS of the Graduate Center for Nutritional Sciences.
 - b. Complete a minimum of 18 hours of work in doctoral status at UK beyond the full-time residency requirement.
 - c. Apply hours completed while pursuing a UK master's degree (Students fulfilling year one of the pre-qualifying residency requirement this way may not also fulfill year two using master's course work).
3. For students with extensive prior graduate work, a waiver of one or even both years of pre-qualifying residency may be appropriate.
 - a. Such requests should be submitted in writing by the DGS to the Dean of the Graduate School and should include a detailed justification, as well as evidence that the student's Advisor and Advisory Committee support the request.
 - b. For international students, a waiver of one year of pre-qualifying residency based on a master's degree earned at a foreign institution may be appropriate. Such requests should be made by the DGS to the Dean of the Graduate School.

Post-Qualifying Residency

1. Candidates (students who have satisfactorily completed their Qualifying Examination) for the doctorate must complete **two semesters** of full-time dissertation study or three semesters of part-time dissertation study immediately following the Qualifying Examination. This may be accomplished as follows:
 - a. Registration for nine hours of NS 769 in two consecutive semesters, with a grade of "S." If a summer term is substituted for one of the semesters, 3 credits must be taken in the first summer session and 6 credits in the second summer session.
 - b. Registration for 6 hours of 769 in three consecutive (part-time) semesters, with a grade of "S." If a summer registration is substituted for one of the semesters, 6 credits must be taken in the second summer session.
 - c. In order to receive 769 credit, students must pass the Qualifying Examination within the first six weeks of the semester (or within the first three weeks of the second Summer Session). Students who do not complete the Qualifying Examination within this deadline must drop their 769 registration and substitute it with NS 790.
2. Students may register for up to 6 credits of course work during a post-qualifying residency semester. In this situation, students should register for a minimum of 6 credits of 769 in addition to the course work credits.
3. Students who have passed their Qualifying Examination are not eligible to register for research credits or independent study credits that duplicate their dissertation research.
4. After completion of the post-qualifying residency credit, doctoral students must be enrolled continuously (i.e., in fall and spring semesters) in 749 or 769 for zero credits until completion of the degree.
 - a. Students who have satisfied the post-qualifying residency requirement and wish to be considered full-time for the purposes of student financial aid and loan deferment must be enrolled in 749 (0). No fees will be assessed.
 - b. The DGS must certify that the student is working at least half-time on the dissertation in order to register in 749. Registration in 749 is limited to a maximum of six semesters (not counting summer terms).
 - c. International students must be registered for 749 to meet full-time enrollment requirements (do not request 769 for zero (0) credits).
 - d. All 749 (0) and 769 (0) registrations are processed in the Graduate School.
 - e. The Graduate School will consider petitions for extending 749 status beyond the six semester limit for students making good progress towards the completion of the dissertation, and who have not exceeded the time limits for completion of the degree. Such petitions should be submitted by the DGS, with the support of the Thesis Advisor.

Qualifying Examination for the Ph.D. Student

A Qualifying Examination is required of all doctoral students. It verifies that the student has sufficient understanding of and competence in his/her chosen field in order to become a candidate for the Ph.D.

- The Qualifying Examination consists of both a written and oral component and is prepared and administered by the Advisory Committee. All members of the Advisory Committee must be present at the oral Qualifying Examination. A majority Committee vote is required for successful completion of the examination.
- The Qualifying Examination is given after two semesters (if entering with an M.S. in Nutrition) or four semesters (if entering with a B.S. in Nutrition) of graduate work in the Graduate Center for Nutritional Sciences, or the equivalent.
- Students must submit a completed *Recommendation for Qualifying Examination* form (<http://www.research.uky.edu/gs/RecommQualExam.pdf>) to the DGS three weeks prior to the

scheduled examination. The DGS then schedules the Qualifying Examination, which the Graduate School must approve two weeks before it takes place.

- The DGS will report the results of the Qualifying Examination to the Graduate School within 10 days of its conclusion.
- If the result is failure, the Committee determines the conditions to be met before another examination may be given. The minimum time between examinations is four months. A second examination must be taken within one year after taking the first examination. A third examination is not permitted.
- The Qualifying Examination should be completed in four weeks and consists of two parts:
 1. Written Examination:
 - a. Part I. Closed book examinations, given within one week, consisting of questions written by each Advisory Committee member. Students may take each part of the member's written exam on a separate day. (Note: Each faculty is required to provide exam questions that will take approximately three (3) hours for the student to answer.)
 - b. Part II. Open book examinations. Completion of a research proposal on a novel topic developed in consultation with the advisor. The topic should be related to the dissertation project. The proposal is due seven (7) days before the oral examination and no later than three (3) weeks from the start of the closed book examination. The student is encouraged to initiate development of the proposal as early as possible after entry into the program.
 2. Oral Examination: Given during the fourth week from the start of the written examination.

Ph.D. Dissertation Proposal

1. The student will submit to the Advisory Committee a dissertation proposal within a semester after passing the Qualifying Examination.
2. The dissertation proposal must be approved by the Advisory Committee.
3. The student should use an NIH or USDA format to prepare the dissertation proposal.

Ph.D. Dissertation

Prior to the Final Examination, the doctoral candidate must present a dissertation that represents the culmination of a major research project. It must be a well-reasoned, original contribution to knowledge in the field of study and should provide evidence of high scholarly achievement.

1. The student's Advisor will provide the primary guidance in planning and preparing the dissertation, however other members of the Advisory Committee should be consulted and may be involved as well.
2. The dissertation should be written so that the chapters are in the format of manuscripts (which will be submitted to refereed journals for publication).
3. All core members of the Advisory Committee must read the dissertation prior to signing the *Dissertation Approval Sheet* (<http://www.research.uky.edu/gs/DissertationApproval.pdf>). The Advisory Committee must approve it before graduation.
4. The dissertation form must conform to the instructions prepared by the Graduate School. For specific instructions, a copy of the *Instructions for the Preparation of Theses and Dissertations* may be obtained from the Graduate School Office (<http://www.research.uky.edu/gs/thesdissprep.html>).
5. Students may submit a thesis or dissertation either in printed form, or totally electronic form. Although the required format for electronic theses and dissertations (ETDs) is nearly identical to that for the traditional printed version, there are some important differences and exceptions. See ETD Web site at <http://www.uky.edu/ETD/>.

6. Dissertation fee payment should be made at the University Billings and Collections Office. Students may also have their dissertation copyrighted if desired. (See the UK *Graduate School Bulletin* for details <http://www.research.uky.edu/gsbulletin/bullinfo.html>).

Final Examination

The Final Examination will consist of an open formal seminar presentation on the dissertation topic followed by an oral exam. It will include a defense of the dissertation and may be as comprehensive in the major and minor areas as the Advisory Committee chooses. An expanded Advisory Committee chaired by the Advisor conducts it. The Dean of the Graduate School and the President of the University are "ex officio" members of all final examination committees.

The examination is a public event and scheduling is published and announced beforehand. Any member of the University community may attend.

1. **At least 30 days prior** to the Final Examination, following notification by the Advisor that the dissertation has been distributed to members of the Advisory Committee, the DGS will present to the Graduate School a *Notification of Intent to Schedule a Final Doctoral Examination* (<http://www.research.uky.edu/gs/NotificationFinalDocExam.pdf>).
2. The Notification form must arrive at the Graduate School **a minimum of 8 weeks** prior to the first day of the anticipated week of defense. At this time the Graduate Dean appoints an Outside Examiner as a core member of the Advisory Committee.
3. The Final Examination must take place **no later than eight days prior to the last day of classes of the semester** in which the student expects to graduate.
4. At the time the Final Examination is scheduled (at least two weeks before the date desired), the *Request for Final Doctoral Examination* (<http://www.research.uky.edu/gs/RequestFinalDocExam.pdf>) plus a signed *Dissertation Approval Form* (<http://www.research.uky.edu/gs/DissertationApproval.pdf>), along with an acceptable copy of the dissertation, must be presented to the Graduate School. The draft must be complete in content, including all footnotes, tables, figures, and appendices. A full bibliography or set of references must be included, along with a title page and abstract.
5. After the Final Examination is passed, the final copy of the dissertation is prepared. Final copies are submitted to the Graduate School along with the signatures of the Advisor and the DGS. The dissertation in its final form must be received in the Graduate School office **within 60 days of the Final Examination**. If this deadline is not met, the candidate must undergo a second examination.

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/her work.

III. Curriculum Requirements

All students are required to complete the Core Curriculum. Elective courses will be recommended by the Advisory Committee. Course descriptions are found in **Appendix A**.

Some courses are cross-listed with other units and departments, but for clarity, only the “NS” prefixes are listed below. Students in the Nutritional Science programs should always register under the “NS” prefix.

1. Ph.D. in Nutritional Sciences – Core Curriculum

<u>Nutrition Core Courses</u>			Credit Hours
NS	601	Macronutrient Metabolism	4
NS	602	Micronutrient Metabolism*	4
NS	771	Graduate Seminar in Nutritional Sciences	2**
NS	704	Current Topics in Nutrition	1
 <u>Other Core Courses</u>			
STA	570	Basic Statistical Analysis	4
BCH	607	Biomolecules and Metabolism	3
BCH	608	Biomolecules and Molecular Biology	3
PGY	502	Principles of Systems, Cellular and Molecular Physiology	5
 <u>Nutrition Selectives</u>			
6 hours to be selected from:			
NS	607	Food-Related Behaviors	3
NS	701	Nutrition and Chronic Diseases	4
ASC	689	Physiology of Nutrient Digestion and Absorption	3
ASC	681	Energy Metabolism	2
ASC	683	Protein Metabolism	2
NS	604	Lipid Metabolism	3
			Core Courses 26
			Selective Courses 6
			<u>Total (minimum) 32</u>

*NS/ASC 602 currently is not offered. It can be replaced by ASC 685 Mineral Metabolism (2) and ASC 687 Vitamin Metabolism (2).

A minimum of 2 credit hours required. Attendance of all Ph.D. students is required each semester during residency at the University of Kentucky and is strongly encouraged thereafter. Students must register for NS 771-001 (1 credit) if they are presenting seminars, and for NS 771-002 (0 credit), if they are not presenting seminars, until 18 credit hours of NS 769 residency requirements are completed. The student must present two seminars, one being unrelated to his/her research and the other being related to the topic of the dissertation **prior to the Qualifying Examination (see “Ph.D. Requirements”).

2. Suggested Elective Courses for the Ph.D. in Nutritional Sciences

Other courses may also be taken as electives if suggested by the Advisory Committee.

NS	790	Research in Nutritional Sciences	0-6
NS	782	Special Problems in Nutritional Sciences	1-6
ASC	684	Advanced Ruminant Nutrition	3
ASC	686	Advanced Nonruminant Nutrition	3
BCH	609	Plant Biochemistry	3
BCH	610	Biochemistry of Lipids and Membranes	3
BCH/BIO/MI	615	Molecular Biology	3
BIO/PGY	549	Comparative Endocrinology	3
BIO	542	Histology	5
BSC/ANT	774	Behavioral and Ecological Aspects of Human Nutrition	3
BSC	775	Human Response to Stress	3
BSC	778	Behavioral Factors in Selected Diseases	3
NS	704	Current Topics in Nutritional Sciences	1
NS	608	Nutritional Immunology	3
NS	605	Wellness and Sports Nutrition	3
NS	606	Molecular Biological Applications in Nutrition	2
NS	609	Ethics in Clinical Sciences Research	1
NS	701	Nutrition in Chronic Diseases	4
NS	702	Problem-Based Case Studies	1-5
EDP	661	Counseling Techniques II	3
GRN/BIO	612	Biology of Aging	3
GRN/SW	643	Biomedical Aspects of Aging	3
GS	610	College Teaching	1
KHP	420G	Physiology of Exercise	3
KHP	620	Advanced Exercise Physiology	3
KHP	621	Exercise and Coronary Heart Disease	3
KHP	720	Sport Medicine	3
MI	710	Molecular Cell Biology	3
MI	685	Advanced Immunology	4
NS	620	Nutrition and Aging	2
NS	640	Human Nutrition: Assessment	3
PGY	522	Quantitative Physiology	4
PGY	607	Hormonal Control Mechanisms	3
TOX	680	Advanced Toxicology	3

3. Example of Ph.D. Curriculum in Nutritional Sciences

<u>Course</u>	<u>First Year</u>		<u>Credit Hours</u>
Fall			
BCH	607	Biomolecules and Metabolism	3
NS	601	Macronutrient Metabolism	4
NS	771	Graduate Seminar in Nutritional Sciences	0
NS	790	Research in Nutritional Sciences	2
Spring			
BCH	608	Biomolecules and Molecular Biology	3
NS	602	Micronutrient Metabolism*	4
NS	704	Current Topics in Nutrition	1
NS	771	Graduate Seminar in Nutritional Sciences	0
NS	790	Research in Nutritional Sciences	2
Elective			1-3

<u>Course</u>	<u>Second Year</u>		<u>Credit Hours</u>
Fall			
PGY	502	Principles of Systems, Cellular and Molecular Physiology	5
NS	771	Graduate Seminar in Nutritional Sciences	1
NS	790	Research in Nutritional Sciences	2
Selective/Elective			3-6
Spring			
STA	570	Basic Statistical Analysis	4
NS	607	Food-Related Behaviors	3
NS	771	Graduate Seminar in Nutritional Sciences	1
NS	790	Research in Nutritional Sciences	2
Selective/Elective			1-3

**NS/ASC 602 currently is not offered. It can be replaced by ASC 685 Mineral Metabolism (2) and ASC 687 Vitamin Metabolism (2).*

IV. Checklist for Ph.D. Students

- _____ *Advisory Committee Request* form to Director of Graduate Studies (DGS) and the Graduate School
- _____ Curriculum Approved by the Advisory Committee, DGS, and the Graduate School
- _____ Curriculum Requirements Completed
- _____ Pre-Qualifying Residency Requirement Satisfied
- _____ Qualifying Examination
- _____ Notification of Results of Qualifying Examination to Graduate School (Admission to Candidacy is granted when Qualifying Examination has been passed)
- _____ Dissertation Proposal Approved by the Advisory Committee
- _____ Two Consecutive Semesters of NS 769 (residency requirement)
- _____ File for Degree with Graduate School
- _____ Draft of Dissertation to Advisory Committee
- _____ *Notification of Intent to Schedule Final Examination* form to The Graduate School
- _____ *Request for Final Examination* form, Dissertation Approval Sheet and Draft of Dissertation to Graduate School
- _____ Final Examination (oral)
- _____ Dissertation Accepted by Advisor, DGS and Approved by the Graduate School
- _____ Copies of Advisory Committee Approved Dissertation to the Graduate School, Advisor and the DGS
- _____ Preparation of Manuscript(s)

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 <http://www.research.uky.edu/gs/gradhome.html>.
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. 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.
- Interested applicants should submit with their other application materials a completed *Research Assistantship Application Form* (<http://www2.mc.uky.edu/nutrisci/forms.html>) 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.htm>.
- 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 Guidelines

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/her work.

III. Curriculum Requirements

All students are required to complete the Core Curriculum. For students pursuing Plan A, elective courses will be recommended by the Advisor. For those following Plan B, elective courses will be recommended by the Director of Graduate Studies (DGS). Course descriptions are found in **Appendix A**.

Some courses are cross-listed with other units and departments, but for clarity, only the "NS" prefixes are listed below. Students in the Nutritional Science programs should always register under the "NS" prefix.

1. M.S. in Nutritional Sciences – Core Curriculum

<u>"Plan A" (Thesis Option)</u>			Credit Hours
NS	601	Macronutrient Metabolism	4
NS	602	Micronutrient Metabolism***	4
NS	704	Current Topics in Nutritional Sciences	1
STA	570	Basic Statistical Analysis	4
NS	607	Food-Related Behaviors	3
NS	771	Graduate Seminar in Nutritional Sciences	0-1*
Emphasis Requirements			12
			<u>Total (minimum) 29</u>

NS	768	Resident (Research) Credit in Nutritional Sciences	6
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"Plan B" (Non-Thesis Option)

NS	601	Macronutrient Metabolism	4
NS	602	Micronutrient Metabolism***	4
NS	704	Current Topics in Nutritional Sciences	1
STA	570	Basic Statistical Analysis	4
NS	607	Food-Related Behaviors	3
NS	771	Graduate Seminar in Nutritional Sciences	0**
NS	782	Special Problems	2-6
Emphasis Requirements and Electives			18
			<u>Total (minimum) 35</u>

**Students are required to register twice for 0 credits, and once for 1 credit.*

***Students are required to register twice for 0 credits*

****NS/ASC 602 currently is not offered. It can be replaced by ASC 685 Mineral Metabolism (2) and ASC 687 Vitamin Metabolism (2).*

2. M.S. in Nutritional Sciences – Emphasis Area Requirements

Clinical Nutrition (Limited to those with B.S. in Dietetics or Nutrition)

NS	701	Nutrition and Chronic Diseases	4
NS	702	Clinical Nutrition Problem-Based Case Studies	4
NS	640	Human Nutrition: Assessment	3
Electives		"Plan A" or "Plan B"	1 or 7

Community Nutrition

NFS	603	Advanced Community Program Development	3
NS	640	Human Nutrition: Assessment	3
HES	600	Research Methodology in Human Environmental Sci.	3
NFS	516	Maternal and Child Nutrition (or)	3
NS	620	Nutrition and Aging	2
Electives		"Plan B" only	6-7

Molecular and Biochemical Nutrition

BCH	607	Biomolecules and Metabolism	3
BCH	608	Biomolecules and Molecular Biology	3
PGY	412G	Principles of Systems, Cellular and Molecular Physiology	4
NS	606	Molecular Biology Applications in Nutrition	2
Electives		"Plan B" only	6

Wellness/Sports Nutrition

NFS	603	Advanced Community Program Development	3
NS	605	Wellness and Sports Nutrition	3
NS	640	Human Nutrition Assessment	3
KHP	620	Advanced Exercise Physiology	3
Electives		"Plan B" only	6

3. Suggested Elective Courses for the M.S and Ph.D. in Nutritional Sciences

Other courses may also be taken as electives if suggested by the Advisory Committee.

NS	790	Research in Nutritional Sciences	0-6
NS	782	Special Problems in Nutritional Sciences	1-6
ASC	684	Advanced Ruminant Nutrition	3
ASC	686	Advanced Nonruminant Nutrition	3
BCH	609	Plant Biochemistry	3
BCH	610	Biochemistry of Lipids and Membranes	3
BCH/BIO/MI	615	Molecular Biology	3
BIO/PGY	549	Comparative Endocrinology	3
BIO	542	Histology	5
BSC/ANT	774	Behavioral and Ecological Aspects of Human Nutrition	3
BSC	775	Human Response to Stress	3
BSC	778	Behavioral Factors in Selected Diseases	3
NS	704	Current Topics in Nutritional Sciences	1
NS	608	Nutritional Immunology	3
NS	605	Wellness and Sports Nutrition	3
NS	606	Molecular Biological Applications in Nutrition	2
TOX	600	Ethics In Scientific Research	1
NS	701	Nutrition in Chronic Diseases	4
NS	702	Problem-Based Case Studies	1-5
EDP	661	Counseling Techniques II	3
GRN/BIO	612	Biology of Aging	3
GRN/SW	643	Biomedical Aspects of Aging	3
GS	610	College Teaching	1
KHP	420G	Physiology of Exercise	3
KHP	620	Advanced Exercise Physiology	3
KHP	621	Exercise and Coronary Heart Disease	3
KHP	720	Sport Medicine	3
MI	710	Molecular Cell Biology	3
MI	685	Advanced Immunology	4
NS	620	Nutrition and Aging	2
NS	640	Human Nutrition: Assessment	3
PGY	522	Quantitative Physiology	4
PGY	607	Hormonal Control Mechanisms	3
TOX	680	Advanced Toxicology	3

4. Example of M.S. Curriculum "Plan B" in Nutritional Sciences with Clinical Nutrition Emphasis

Other emphasis areas would be similar with appropriate course substitutions, and the "Plan A" would have research credits with less course work.

<u>Course</u>	<u>First Year</u>		<u>Credit Hours</u>
Fall			
NS	601	Macronutrient Metabolism	4
NS	640	Human Nutrition: Assessment	3
NS	771	Graduate Seminar in Nutritional Sciences	0
Electives			2
Spring			
NS	602	Micronutrient Metabolism*	4
NS	704	Current Topics in Nutrition	1
NS	701	Nutrition and Chronic Diseases	4
NS	771	Graduate Seminar in Nutritional Sciences	0
Summer			
NS	782	Special Problems	1-6

<u>Course</u>	<u>Second Year</u>		<u>Credit Hours</u>
Fall			
STA	570	Basic Statistical Analysis	4
Electives			6
Spring			
NS	607	Food-Related Behaviors	3
NS	702	Clinical Nutrition Problem-Based Case Studies	4
Electives			2-3

**NS/ASC 602 currently is not offered. It can be replaced by ASC 685 Mineral Metabolism (2) and ASC 687 Vitamin Metabolism (2).*

5. Example of M.S. Curriculum "Plan B" in Nutritional Sciences with Wellness/Sports Nutrition Emphasis

Other emphasis areas would be similar with appropriate course substitutions and the "Plan A" would have research credits with less course work.

<u>Course</u>		<u>First Year</u>	<u>Credit Hours</u>
Fall			
NS	601	Macronutrient Metabolism	4
NS	640	Human Nutrition: Assessment	3
NS	771	Graduate Seminar in Nutritional Sciences	0
NFS	603	Advanced Community Program Development	3
Spring			
NS	602	Micronutrient Metabolism*	4
NS	704	Current Topics in Nutrition	1
KHP	620	Advanced Exercise Physiology	3
NS	771	Graduate Seminar in Nutritional Sciences	0
NS	782	Special Problems	2

<u>Course</u>		<u>Second Year</u>	<u>Credit Hours</u>
Fall			
NS	605	Wellness and Sports Nutrition	3
STA	570	Basic Statistical Analysis	4
Electives			2
Spring			
NS	607	Food-Related Behaviors	3
Electives			3

**NS/ASC 602 currently is not offered. It can be replaced by ASC 685 Mineral Metabolism (2) and ASC 687 Vitamin Metabolism (2).*

APPENDIX A

Courses Related to the Ph.D. & M.S. Program Requirements

- NS 601 - MACRONUTRIENT METABOLISM (4)
Emphasis will be on macronutrient assimilation and utilization and will include lectures, discussion and student presentations related to energy balance and protein-lipid carbohydrate metabolism and its relationship to health maintenance. This course integrates biochemistry, physiology and nutrition with regards to macronutrient metabolism. *Prerequisite: PGY 502, 503; consent of instructor. BCH 607 to be taken concurrently.*
- NS/ASC 602 – MICRONUTRIENT METABOLISM (4)
Detailed study of the properties, metabolism, biochemical and physiological functions and interactions of vitamins and minerals, and their relationships to deficiency symptoms and toxicity. *Prerequisite: BCH 401G or consent of instructor.*
- NS 604 - LIPID METABOLISM (2)
Emphasis on factors influencing the absorption of fats and fatty acids, distribution and incorporation of fatty acids into body tissues, biosynthesis and catabolism of fatty acids, cholesterol and bioactive eicosanoids and involvement of fats in the disease process. *Prerequisite: BCH 401G and PGY 412G or consent of instructor.*
- NS/ANT/BSC/NFS 607 - FOOD-RELATED BEHAVIORS (3)
This team-taught course will provide background in topics and methods in food-related behaviors to students in Nutritional Sciences and other interested students. The course will follow a problem-based learning approach, and will consist of 3 out of 4 modules in any given year. The four modules will be Social and Cultural Perspectives on Food, Psychological Perspectives on Food and Food Behaviors, Challenges to Community Food Security, and International Issues in Nutrition.
- NS 701 - NUTRITION AND CHRONIC DISEASES (4)
Selected topics in nutritional sciences as related to health and chronic diseases, e.g. gastrointestinal disease, cancer, AIDS, diabetes, cardiovascular disease, obesity, including drug-nutrient interactions. *Prerequisite or concur: CNU 601.*
- NS 704 - CURRENT TOPICS IN NUTRITION (1)
The course is designed to develop the students' independent thinking and critical analysis related to various nutritional issues. These skills will be developed through reading assignments and group discussion related to current topics in nutrition. *Prerequisite: Consent of instructor.*
- NS 771 - GRADUATE SEMINAR IN NUTRITIONAL SCIENCES (1)
Reports and discussion on recent research and current literature in nutritional sciences. *Prerequisite: Graduate standing and consent of instructor for non-NS students enrolled for one credit.*
- BCH 607 - BIOMOLECULES AND METABOLISM (3)
An introductory course devoted to the structure and function of proteins and enzymes and the generation and storage of metabolic energy associated with the metabolism of carbohydrates, lipids, and amino acids. *Prerequisite: CHE 107, CHE 230 and 232, and BIO 152.*
- BCH 608 - BIOMOLECULES AND MOLECULAR PHYSIOLOGY (3)
A continuation of BCH 607. The topics discussed include the molecular basis of gene expression, molecular endocrinology; biochemistry of connective tissue, muscle, erythrocyte, and the immune system; structure, function and metabolism of membranes. *Prerequisite: BCH 607 or equivalent.*
- PGY 502 - PRINCIPLES OF SYSTEMS, CELLULAR AND MOLECULAR PHYSIOLOGY (5)
Advanced survey of the major mammalian physiological systems. *Prerequisite: One year each, physics, general chemistry; PGY 206 or its equivalent (Same as BIO 502).*

STA 570 - BASIC STATISTICAL ANALYSIS (4)
Primarily in biological, behavioral and social sciences. Introduction to methods of analyzing data from experiments and surveys; the role of statistics in research, statistical concepts and models; probability and distribution functions; estimation; hypothesis testing; regression and correlation; analysis of single and multiple classification models; analysis categorical data. Lecture, three hours; laboratory, two hours. Prereq.: MA 109 or equivalent. *Prerequisite: MA 109 or equivalent. For graduate students; undergraduates must have consent of instructor.*

ASC 681 - ENERGY METABOLISM (2)
An in-depth discussion of nutritional energetics from the standpoint of factors which influence the utilization of dietary energy. A critical review of current literature. *Prerequisite: ASC 378 or equivalent, BCH 502 or equivalent, or consent of instructor.*

ASC 683 - PROTEIN METABOLISM (2)
A study of the principles and present concepts of protein and amino acid nutrition and metabolism. *Prerequisite: Graduate level biochemistry. Offered in the fall semester of odd numbered years.*

ASC/NSF 685 - MINERAL METABOLISM (2)
An in-depth review of the function, requirement deficiency and toxicity of mineral elements in nutrition. Emphasis on the interactions between elements and current literature will be made. *Prerequisite: ASC 378 or NFS 510 or equivalent, BCH 502 or equivalent or consent of instructor. Note: NS 601 fulfills the prerequisite.*

ASC 687 - VITAMIN METABOLISM (2)
Detailed study of the metabolism of vitamins and the role of vitamins in the metabolism of carbohydrates, proteins, lipids, and minerals. *Prerequisite: BCH 502 or CHE 552 or consent of instructor. Note: NS 601 fulfills the prerequisite.*

ASC 689 - PHYSIOLOGY OF NUTRIENT DIGESTION AND ABSORPTION (3)
This course is designed to analyze and compare the structure and function of mammalian and avian gastrointestinal tracts, feedstuff digestion processes, and specific mechanisms responsible for nutrient absorption in various cell types. Emphasis will be placed on livestock and avian species. *Prerequisite: Graduate level biochemistry. Offered in the spring semester of even numbered years.*

APPENDIX B

CURRICULUM FORM FOR THE Ph.D. AND M.S. PROGRAMS IN NUTRITIONAL SCIENCES

Name _____ Social Security # _____ Degree Program _____

<u>Course No.</u>	<u>Credit Hour</u>	<u>Course Title</u>
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1st Semester (Fall _____ Spring _____/Year _____)

2nd Semester (Fall _____ Spring _____/Year _____)

3rd Semester (Fall _____ Spring _____/Year _____)

4th Semester (Fall _____ Spring _____/Year _____)

5th Semester (Fall _____ Spring _____/Year _____)

6th Semester (Fall _____ Spring _____/Year _____)

7th Semester (Fall _____ Spring _____/Year _____)

8th Semester (Fall _____ Spring _____/Year _____)

9th Semester (Fall _____ Spring _____/Year _____)

Committee Members _____, Chair

Committee Approval:

Yes _____ No _____

Date _____

Signature of Advisor

Date: _____

Ph.D. Student

Name _____ Social Security # _____

<u>Course #</u>		<u>Credit Hour</u>	<u>Course Title</u>	<u>Grade</u>
Core Courses:				
NS	601	4	Macronutrient Metabolism	_____
NS	602	4	Micronutrient Metabolism*	_____
NS	771	2	Graduate Seminar in Nutritional Sciences	_____
NS	704	1	Current Topics in Nutrition	_____
STA	570	4	Basic Statistical Analysis	_____
BCH	607	3	Biomolecules and Metabolism	_____
BCH	608	3	Biomolecules and Molecular Biology	_____
PGY	502	5	Principles of Systems, Cellular and Molecular Physiology	_____

Selectives: 6 hours to be selected from: (Circle)

NS	607	3	Food-Related Behaviors	_____
NS	701	4	Nutrition and Chronic Diseases	_____
ASC	689	3	Physiology of Nutrient Digestion and Absorption	_____
ASC	681	2	Energy Metabolism	_____
ASC	683	2	Protein Metabolism	_____
NS	604	3	Lipid Metabolism	_____

Electives:

NS	790	0-6	Research	_____
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**NS/ASC 602 currently is not offered. It can be replaced by ASC 685 Mineral Metabolism (2) and ASC 687 Vitamin Metabolism (2).*

M.S. Student ("Plan A" or "Plan B")

Name _____ Social Security # _____

<u>Course #</u>		<u>Credit Hour</u>	<u>Course Title</u>	<u>Grade</u>
"Plan A" (Thesis Option)				
NS	601	4	Macronutrient Metabolism	_____
NS	602	4	Micronutrient Metabolism*	_____
NS	704	1	Current Topics in Nutritional Sciences	_____
STA	570	4	Basic Statistical Analysis	_____
BSC/ANT/NFS	607	3	Food-Related Behaviors	_____
NS	771	0-1	Graduate Seminar in Nutritional Sciences	_____
NS	768	6	Research Residency in Nutritional Sciences	_____

"Plan B" (Non-Thesis Option)

NS	601	4	Macronutrient Metabolism	_____
NSC	602	4	Micronutrient Metabolism	_____
NS	704	1	Current Topics in Nutritional Sciences	_____
STA	570	4	Basic Statistical Analysis	_____
BSC/ANT/NFS	607	3	Food-Related Behaviors	_____
NS	771	0	Graduate Seminar in Nutritional Sciences	_____
NS	782	1-6	Special Problems	_____

**NS/ASC 602 currently is not offered. It can be replaced by ASC 685 Mineral Metabolism (2) and ASC 687 Vitamin Metabolism (2).*

M.S. Student "Plan A" or "Plan B" (Continued)

Name _____ Social Security # _____

<u>Course #</u>		<u>Credit Hour</u>	<u>Course Title</u>	<u>Grade</u>
Emphasis Areas:				
Clinical Nutrition				
NS	701	4	Nutrition and Chronic Diseases	_____
NS	702	4	Clinical Nutrition Problem-Based Case Studies	_____
NS	640	3	Human Nutrition Assessment	_____
Community Nutrition				
NFS	603	3	Advanced Community Program Development	_____
NS	640	3	Human Nutrition Assessment	_____
HES Science	600	3	Research Methodology in Human Environmental Science	_____
NFS	516	3	Maternal and Child Nutrition (or)	_____
NS	620	2	Nutrition and Aging	_____
Molecular and Biochemical Nutrition				
BCH	607	3	Biomolecules and Metabolism	_____
BCH	608	3	Biomolecules and Molecular Biology	_____
PGY	412G	4	Principles of Systems, Cell. & Mol Physiology	_____
NS	606	2	Molecular Biology Applications in Nutrition	_____
Wellness/Sports Nutrition				
NS	605	3	Wellness and Sports Nutrition	_____
NFS	603	3	Advanced Community Program Development	_____
NS	640	3	Human Nutrition: Assessment	_____
KHP	620	3	Advanced Exercise Physiology	_____
Electives				