

Nutrition (NTR)

NTR 210 Introduction to Community Food Security (3 credit hours)

This introductory interdisciplinary course teaches students about the many facets of food security in the United States, including historical impacts of race and social class on food security; food justice and food accessibility; the roles of non-profit organizations, government agencies, and disciplinary experts in developing food security efforts; and approaches to developing programs and policies, federal to local, to address the problem. In addition, service-learning experiences in students own communities allow them to gain knowledge about the specific agencies approaches to community food security, critically reflecting upon the experience and creating their own community food security action plan.

GEP Interdisciplinary Perspectives, GEP U.S. Diversity

Typically offered in Summer only

NTR 220 Food and Culture (3 credit hours)

This course explores traditional food cultures around the world; highlighting foodways, flavor profiles, and commonly used ingredients. This course focuses on how and to what extent traditional foodways of US immigrants are impacted by the majority culture and how regional cuisines have been impacted by historical migration patterns. Students will examine their own food culture, biases, and how these impact personal interactions with others through a semester-long project. Food tastings and sensory experiences will expose students to a variety of global and US regional cuisines allowing students to compare and contrast flavor profiles and commonly used ingredients. Course is available to all majors.

GEP Global Knowledge

Typically offered in Summer only

NTR 301/FS 301 Introduction to Human Nutrition (3 credit hours)

Functions, dietary sources, digestion and absorption, deficiencies and excesses of essential nutrients in humans; dietary guidelines; food labels; the study of diet-disease relationships; the role of diet in heart disease, diabetes, hypertension, osteoporosis; energy balance and weight control; dietary supplement regulation; diet and athletic performance.

Prerequisite: Sophomore standing

GEP Natural Sciences

Typically offered in Fall, Spring, and Summer

NTR 302 Introduction to Nutrition Research, Communication, and Careers (3 credit hours)

This course exposes students to scientific literature, communication, and careers in the field of nutrition. Students will learn how to critically evaluate scientific literature and communicate that information both orally and in writing. Course topics include: research design, nutritional epidemiology, statistics, scientific writing, professionalism, and current nutrition-related "hot topics." Class time will be a combination of lecture and small or large group discussions and individual or group in-class assignments. Student evaluations include in-class assignments, writing assignments, oral presentations, and exams.

Prerequisite: NTR 301

Typically offered in Fall, Spring, and Summer

NTR 310 Food Insecurity and Federal Nutrition Programs (3 credit hours)

In this course, students will gain an in-depth understanding of food systems and food insecurity in the United States. They will explore government and non-profit food programs in the United States, including supplemental nutrition assistance, child nutrition programs, emergency food distribution, and the food banking system. Students will investigate topics of food justice, community reliance and social change as they relate to nutrition and food distribution systems. Students will also examine program impact and identify opportunities to improve policies, programming, and public health outcomes. Course content will be delivered in a variety of ways, including online lectures, forums, readings, videos, online activities, and guest lectures.

Typically offered in Fall, Spring, and Summer

NTR 330 Public Health Nutrition (3 credit hours)

Students will explore factors that affect the health and nutrition of the population as well as how those factors are identified, studied, and applied to improve health issues. Students will identify services and programs available to address nutrition and health issues. Students will analyze current events related to public health, evaluate nutrition related policy, and advocate for issues related to nutrition.

Typically offered in Spring and Summer

NTR 401/FS 401/NTR 501/FS 501 Advanced Nutrition and Metabolism (3 credit hours)

Nutritional biochemistry and physiology as it relates to establishment of nutrient requirements and Dietary Reference Intakes. Digestion, absorption, metabolism, storage, and excretion of nutrients and other markers of nutritional adequacy or excess with emphasis on micronutrients. Functions of nutrients, in bone muscle, blood, growth and development and communication. Credit will not be awarded for both NTR (FS) 401 and NTR (FS) 501.

Prerequisite: (NTR 301 or NTR 415) and (CH 221 or CH 220 or CH 225)

Typically offered in Fall and Summer

NTR 402/NTR 502 Nutrition Communication for Diverse Audiences (3 credit hours)

In this course, students will learn how to clearly and accurately communicate nutrition science to a range of audiences. Students will learn the fundamentals of nutrition communication and how to tailor content for the lay public, low-literacy groups, the media, youth, a professional/scientific audience, and culturally diverse populations. Students will complete a series of written and oral communications assignments using a range of media channels such as blogs, podcasts, and print materials. Students will also work collaboratively in groups to design a nutrition education campaign.

Prerequisite: NTR 302

Typically offered in Fall and Spring

NTR 410/NTR 510 Maternal and Infant Nutrition (3 credit hours)

Students will explore the current research, controversies, and biological mechanisms related to nutrition for women before, during, and after pregnancy, as well as for infants in utero and after birth.

Prerequisite: NTR 301

Typically offered in Spring and Summer

NTR 411/NTR 511 Public Health Perspectives in Infant Feeding (3 credit hours)

This course is designed to help prepare learners to become International Board Certified Lactation Consultants (IBCLC). In this course, students will learn the basics and importance of infant and young child feeding from a public health perspective. Some of the topics that are covered in this course include the public health considerations of breastfeeding and formula feeding in the US and globally, breastfeeding initiation and infant behavior, lifestyle practices and infant feeding, family challenges related to infant feeding, infant feeding research and global impacts, cultural humility for health care providers, and collaboration among healthcare professionals.

Typically offered in Fall and Summer

NTR 412/NTR 512 Clinical Concepts in Infant Feeding (3 credit hours)

This course is designed to help prepare learners to become International Board Certified Lactation Consultants (IBCLC). Students will learn skills and content required for entry level clinical support for infant feeding. Students will learn the fundamentals of infant positioning, latch, and suckle, assessment skills required to evaluate physical development of both the mother and the infant, milk synthesis, milk production, and milk transfer. This course will also prepare the learner to manage the feeding needs of infants across the age spectrum, from the premature infant to the toddler and older child. We will discuss complicated scenarios, to include breastfeeding with physical anomalies, infant hyperbilirubinemia, hypoglycemia, slow weight gain, failure to thrive, and many others. Students will be required to provide their own transportation for field trips.

P: NTR 411 or NTR 511 and BIO 240

Typically offered in Spring only

NTR 413/NTR 513 Clinical Concepts in Infant Feeding Laboratory (1 credit hours)

The laboratory course is designed to complement course content to help prepare learners to become International Board Certified Lactation Consultants (IBCLC). Students will learn and practice skills required for entry-level clinical support for infant feeding. Students will learn the fundamentals of infant positioning, latch, and suckle, and assessment skills required to evaluate physical development of both the mother and the infant, milk synthesis, milk production, and milk transfer. This course will also prepare the learner to manage the feeding needs of infants across the age spectrum, from the premature infant to the toddler and older child. Students will be expected to provide their own transportation for off-campus experiences.

P: BIO 240 and NTR 411 or NTR 511; C: NTR 412 or NTR 512

Typically offered in Spring only

NTR 415/PO 415/PO 515/NTR 515/ANS 515/ANS 415 Comparative Nutrition (3 credit hours)

Principles of nutrition, including the classification of nutrients and the nutrient requirements of and metabolism by different species for health, growth, maintenance and productive functions.

Prerequisite: ANS 225 or ANS 230 or CH 220 or CH 223 or CH 227

Typically offered in Fall, Spring, and Summer

NTR 419 Human Nutrition and Chronic Disease (3 credit hours)

Current concepts regarding, and physiological bases of the roles of nutrition in the prevention and treatment of acute and chronic disease states in humans with emphasis on the process of scientific discovery, reading of original research and transformation of research findings to public policy.

Prerequisite: Junior standing, ANS 230, or ANS/FS/NTR 301 or ANS/NTR/PO 415

Typically offered in Spring only

NTR 425/ANS 425/FM 425/PO 425/NTR 525/FM 525/ANS 525/PO 525 Feed Manufacturing Technology (3 credit hours)

Feed mill management, feed ingredient purchasing, inventory, storage, and quality evaluation, computerized feed formulation, feeding programs for poultry and swine, feed mill design, equipment, maintenance, operation, safety, state and federal regulations pertaining to feed manufacture.

Prerequisite: ANS(NTR,PO) 415 or ANS 230 or ANS 225

Typically offered in Fall, Spring, and Summer

NTR 440/NTR 540 Child & Adolescent Nutrition (3 credit hours)

In this course, students will gain an in-depth understanding of human nutritional needs during early and middle childhood and adolescence. Students will consider how child development affects nutrition and eating behaviors, explore common nutrition concerns that emerge throughout childhood, and evaluate interventions and policies to improve child and adolescent nutrition. The course also includes an introduction to special topics such as food allergies, disordered eating, child obesity, and vegetarian diets. Assessments are designed to evaluate students' mastery of content knowledge, critical thinking, and communication skills. The course content will be delivered in a variety of ways, including lectures, readings, videos, in-class activities, and guest lectures.

P: NTR 301

Typically offered in Fall only

NTR 454/ANS 554/ANS 454 Lactation, Milk and Nutrition (3 credit hours)

Nutritional properties of milk as a high-quality food with nutritional diversity. Principles of physiology, biochemistry and cell biology in the mammary gland. Procedures of milk production and milk collection for milk quality and nutrition. Human lactation vs. that of domestic animals. Impacts of biotechnology and food safety on dairy production. Credit will not be given for both ANS 454 and 554.

Prerequisite: ANS 230 or FS/NTR 400; BCH 451 or ZO 421

Typically offered in Spring only

This course is offered alternate even years

NTR 460/NTR 560 Nutrition for the Older Adult (3 credit hours)

In this course, students will gain an in-depth understanding of nutritional needs for older adults. Students will explore the physiology of aging from a nutrition-focused lens, changes in nutrient requirements due to aging, and clinical considerations for disease-related nutritional implications. Specific health conditions discussed will include nutritional implications of gastrointestinal disorders, cardiovascular and respiratory disease, renal and genitourinary disease, endocrine and metabolic alterations, cognitive disorders, oral health, wound healing, skeletal health, obesity, malnutrition, and nutritional interactions with medications. Course content will be delivered in a variety of ways, including online lectures, readings, videos, online activities, and guest lectures.

Prerequisite: NTR 301

Typically offered in Fall, Spring, and Summer

NTR 490 Senior Capstone Experience in Nutrition (4 credit hours)

In this capstone course, students will work in groups to complete research and service projects for community partners while gaining professional experiences in nutrition. Students will be expected to apply their knowledge and skills gained throughout their nutrition coursework to develop solutions to problems in public health and community nutrition. Students will complete comprehensive written and poster presentations about their work as a group, in addition to individual reflection(s) about their learnings. Students must provide their own transportation when visiting their community partner site. Students should complete this course in the last semester (or year) of their degree. NTS and NTA Majors only; Senior status required.

Prerequisite: NTR 301, NTR 302, and NTR 401; Nutrition Science majors only; Senior status required

Typically offered in Fall and Spring

NTR 492 Professional Internship Experience in Nutrition Science (1-3 credit hours)

This course provides an opportunity for students to gain real-world experience relevant to their academic and career goals. A minimum of 45 hours must be completed for each credit hour earned, with 3 credit hours maximum for each experience. The experience must be arranged by the student and approved by the Undergraduate Teaching Coordinator for Nutrition prior to the start of the experience. To gain approval, a student must submit the completed NTR 492 contract and have it approved by his/her experience supervisor, academic advisor and the undergraduate teaching coordinator/course instructor. In addition to the work described in the contract, a student will complete a series of reflective assignments during and at the end of the experience.

Typically offered in Fall and Spring

NTR 493 Research Experience in Nutrition Science (1-3 credit hours)

This course provides an opportunity for students to gain real-world experience in a scientific research program. A minimum of 42 hours must be completed for each credit hour earned, with 3 credit hours maximum for each experience. The experience must be arranged by the student and approved by the Undergraduate Teaching Coordinator for Nutrition prior to the start of the experience. To gain approval, a student must submit the completed NTR 493 contract and have it approved by his/her research supervisor, academic advisor and the NTR 493 coordinator. In addition to the work described in the contract, a student will complete a series of reflective assignments during and at the end of the experience.

Typically offered in Fall and Spring

NTR 494 Teaching Experience in Nutrition Science (1-3 credit hours)

This course provides an opportunity for students to gain teaching experience relevant to their academic and career goals. A minimum of 45 hours must be completed for each credit hour earned, with 3 credit hours maximum for each experience. The experience must be arranged by the student and approved by the Undergraduate Teaching Coordinator for Nutrition prior to the start of the experience. To gain approval, a student must submit the completed NTR 494 contract and have it approved by his/her experience supervisor, academic advisor and the undergraduate teaching coordinator/course instructor. In addition to the work described in the contract, a student will complete a series of reflective assignments during and at the end of the experience.

Typically offered in Fall and Spring

NTR 495 Special Topics in Nutrition (1-6 credit hours)

Offered as needed to present materials not normally available in regular course offerings or for offering of new courses on a trial basis.

Typically offered in Fall, Spring, and Summer

NTR 500 Principles of Human Nutrition (3 credit hours)

Overview of fields of Nutritional Sciences; functions of nutrients in the human body; sources and properties of nutrients; relationships of food industry practices to nutrition. Credit will not be given for both NTR (FS)400 and NTR 500

Prerequisite: CH 220 and (CH 221 or CH 223) and (ZO 160 or BIO 181/183)

Typically offered in Fall and Summer

NTR 501/FS 501/NTR 401/FS 401 Advanced Nutrition and Metabolism (3 credit hours)

Nutritional biochemistry and physiology as it relates to establishment of nutrient requirements and Dietary Reference Intakes. Digestion, absorption, metabolism, storage, and excretion of nutrients and other markers of nutritional adequacy or excess with emphasis on micronutrients. Functions of nutrients, in bone muscle, blood, growth and development and communication. Credit will not be awarded for both NTR (FS) 401 and NTR (FS) 501.

Prerequisite: (NTR 301 or NTR 415) and (CH 221 or CH 220 or CH 225)

Typically offered in Fall and Summer

NTR 502/NTR 402 Nutrition Communication for Diverse Audiences (3 credit hours)

In this course, students will learn how to clearly and accurately communicate nutrition science to a range of audiences. Students will learn the fundamentals of nutrition communication and how to tailor content for the lay public, low-literacy groups, the media, youth, a professional/scientific audience, and culturally diverse populations. Students will complete a series of written and oral communications assignments using a range of media channels such as blogs, podcasts, and print materials. Students will also work collaboratively in groups to design a nutrition education campaign.

Prerequisite: NTR 302

Typically offered in Fall and Spring

NTR 510/NTR 410 Maternal and Infant Nutrition (3 credit hours)

Students will explore the current research, controversies, and biological mechanisms related to nutrition for women before, during, and after pregnancy, as well as for infants in utero and after birth.

Prerequisite: NTR 301

Typically offered in Spring and Summer

NTR 511/NTR 411 Public Health Perspectives in Infant Feeding (3 credit hours)

This course is designed to help prepare learners to become International Board Certified Lactation Consultants (IBCLC). In this course, students will learn the basics and importance of infant and young child feeding from a public health perspective. Some of the topics that are covered in this course include the public health considerations of breastfeeding and formula feeding in the US and globally, breastfeeding initiation and infant behavior, lifestyle practices and infant feeding, family challenges related to infant feeding, infant feeding research and global impacts, cultural humility for health care providers, and collaboration among healthcare professionals.

Typically offered in Fall and Summer

NTR 512/NTR 412 Clinical Concepts in Infant Feeding (3 credit hours)

This course is designed to help prepare learners to become International Board Certified Lactation Consultants (IBCLC). Students will learn skills and content required for entry level clinical support for infant feeding. Students will learn the fundamentals of infant positioning, latch, and suckle, assessment skills required to evaluate physical development of both the mother and the infant, milk synthesis, milk production, and milk transfer. This course will also prepare the learner to manage the feeding needs of infants across the age spectrum, from the premature infant to the toddler and older child. We will discuss complicated scenarios, to include breastfeeding with physical anomalies, infant hyperbilirubinemia, hypoglycemia, slow weight gain, failure to thrive, and many others. Students will be required to provide their own transportation for field trips.

P: NTR 411 or NTR 511 and BIO 240

Typically offered in Spring only

NTR 513/NTR 413 Clinical Concepts in Infant Feeding Laboratory (1 credit hours)

The laboratory course is designed to complement course content to help prepare learners to become International Board Certified Lactation Consultants (IBCLC). Students will learn and practice skills required for entry-level clinical support for infant feeding. Students will learn the fundamentals of infant positioning, latch, and suckle, and assessment skills required to evaluate physical development of both the mother and the infant, milk synthesis, milk production, and milk transfer. This course will also prepare the learner to manage the feeding needs of infants across the age spectrum, from the premature infant to the toddler and older child. Students will be expected to provide their own transportation for off-campus experiences.

P: BIO 240 and NTR 411 or NTR 511; C: NTR 412 or NTR 512

Typically offered in Spring only

NTR 515/ANS 515/ANS 415/NTR 415/PO 415/PO 515 Comparative Nutrition (3 credit hours)

Principles of nutrition, including the classification of nutrients and the nutrient requirements of and metabolism by different species for health, growth, maintenance and productive functions.

Prerequisite: ANS 225 or ANS 230 or CH 220 or CH 223 or CH 227

Typically offered in Fall, Spring, and Summer

NTR 525/FM 525/ANS 525/PO 525/NTR 425/ANS 425/FM 425/PO 425 Feed Manufacturing Technology (3 credit hours)

Feed mill management, feed ingredient purchasing, inventory, storage, and quality evaluation, computerized feed formulation, feeding programs for poultry and swine, feed mill design, equipment, maintenance, operation, safety, state and federal regulations pertaining to feed manufacture.

Prerequisite: ANS(NTR,PO) 415 or ANS 230 or ANS 225

Typically offered in Fall and Spring

NTR 540/NTR 440 Child & Adolescent Nutrition (3 credit hours)

In this course, students will gain an in-depth understanding of human nutritional needs during early and middle childhood and adolescence. Students will consider how child development affects nutrition and eating behaviors, explore common nutrition concerns that emerge throughout childhood, and evaluate interventions and policies to improve child and adolescent nutrition. The course also includes an introduction to special topics such as food allergies, disordered eating, child obesity, and vegetarian diets. Assessments are designed to evaluate students' mastery of content knowledge, critical thinking, and communication skills. The course content will be delivered in a variety of ways, including lectures, readings, videos, in-class activities, and guest lectures.

P: NTR 301

Typically offered in Fall only

NTR 550/ANS 550 Applied Ruminant Nutrition (3 credit hours)

Applied concepts in ruminant nutrition for the practicing agricultural professional. Protein, energy, vitamin and mineral nutrition in relation to the nutritional needs and practical feeding of beef cattle, dairy cattle, sheep, and goats. New developments in feeding systems, feed additives and the prevention and treatment of metabolic disorders. Emphasis on solving problems in case studies. Permission given to undergraduates

Prerequisite: ANS 230 or ANS(NTR,PO) 415. Permission given to undergraduates

Typically offered in Fall only

This course is offered alternate even years

NTR 554/FS 554 Lactation, Milk, and Nutrition (3 credit hours)

Nutritional properties of milk as a high-quality food with nutritional diversity. Principles of physiology, biochemistry and cell biology in the mammary gland. Procedures of milk production and milk collection for milk quality and nutrition. Human lactation vs. that of domestic animals. Impacts of biotechnology and food safety on dairy production. Credit will not be given for both ANS 454 and 554.

Prerequisite: ANS 230 or FS/NTR 400; BCH 451 or ZO 421

Typically offered in Spring only

This course is offered alternate even years

NTR 555/FS 555 Exercise Nutrition (3 credit hours)

Metabolism of macro- and micronutrients as affected by exercise and physical activity. Effects of dietary patterns, specific foods, dietary supplements and ergogenic aids on sports performance. Reading and discussion of current literature and individual or group projects.

Prerequisite: NTR 400/500

Typically offered in Spring only

This course is offered alternate odd years

NTR 557/FS 557 Nutraceuticals and Functional Foods (3 credit hours)

This course evaluates the weight of evidence from peer-reviewed scientific literature relating food bioactives, whole foods, and diets to disease prevention, athletic performance, and cognitive development/enhancement. Data are viewed in the context of processing effects, global food and supplement regulations, as well as commercial marketing claims. Key concepts include dose-response, signal transduction, and the use of advanced technologies such as genomics, proteomics and metabolomics. Students will work in teams to develop and write a critical review manuscript suitable for publication.

Typically offered in Fall only

NTR 558/TOX 558/FS 558 Food Toxicology (3 credit hours)

This course evaluates the weight of evidence from peer-reviewed scientific literature relating the presence of chemical or biological toxins, whether naturally occurring or man-made in the food system to health outcomes. Toxicological data are viewed in the context of processing effects, global food and supplement regulations, as well as commercial marketing claims and sustainability. Key concepts include dose-response, phase I and phase II metabolism, signal transduction, and the use of advanced technologies such as genomics, proteomics, and metabolomics. Students will work in teams to develop and write a critical review manuscript suitable for publication.

Prerequisite: Graduate standing or advanced undergraduate students enrolled in Food Science, Nutrition, or Toxicology majors.

Typically offered in Fall only

This course is offered alternate even years

NTR 560/NTR 460 Nutrition for the Older Adult (3 credit hours)

In this course, students will gain an in-depth understanding of nutritional needs for older adults. Students will explore the physiology of aging from a nutrition-focused lens, changes in nutrient requirements due to aging, and clinical considerations for disease-related nutritional implications. Specific health conditions discussed will include nutritional implications of gastrointestinal disorders, cardiovascular and respiratory disease, renal and genitourinary disease, endocrine and metabolic alterations, cognitive disorders, oral health, wound healing, skeletal health, obesity, malnutrition, and nutritional interactions with medications. Course content will be delivered in a variety of ways, including online lectures, readings, videos, online activities, and guest lectures.

Prerequisite: NTR 301

Typically offered in Fall, Spring, and Summer

NTR 561/ANS 561 Equine Nutrition (3 credit hours)

This course explores concepts in equine nutrition including digestive physiology of horses, nutrient requirements for different classes of horses and feed management. Ration evaluation and balancing, as well as problem solving will be a core component to this course.

Prerequisite: NTR 500 or NTR/FS 501 or NTR/PO 515

Typically offered in Spring only

This course is offered alternate odd years

NTR 565/ANS 565 Advanced Canine and Feline Nutrition (3 credit hours)

This course is about the advanced principles of nutrition within canines and felines. The course focuses on the unique gastro-intestinal tracts for the two species as well as their specific nutrient requirements and how the animal industry addresses these needs.

Restriction: Graduate Student or Senior with 3.35 GPA; Prerequisite: 400-level Nutrition Course

Typically offered in Fall only

NTR 594 Special Topics in Nutrition (1-6 credit hours)

The study of special problems and selected topics of current interest in nutrition and related fields.

Typically offered in Fall, Spring, and Summer

NTR 601 Master's Seminar (1 credit hours)

Weekly seminars on topics of current interest given by resident faculty members, graduate students and visiting lecturers.

Typically offered in Fall and Spring

NTR 624 Topical Problems In Nutrition (1-6 credit hours)

Analysis of current problems in nutrition. Also entails the scientific appraisal and solution of a selected problem designed to provide training and experience in research.

Prerequisite: Graduate standing or Senior standing

Typically offered in Fall, Spring, and Summer

NTR 625 Advanced Special Problems In Nutrition (1-6 credit hours)

Directed research in a specialized phase of nutrition designed to provide experience in research methodology and philosophy.

Prerequisite: Graduate standing

Typically offered in Spring only

NTR 685 Master's Supervised Teaching (1-3 credit hours)

Teaching experience under the mentorship of faculty who assist the student in planning for the teaching assignment, observe and provide feedback to the student during the teaching assignment, and evaluate the student upon completion of the assignment.

Prerequisite: Master's student

Typically offered in Fall and Spring

NTR 690 Advanced Special Problems In Nutrition (1-6 credit hours)

Directed research in a specialized phase of nutrition designed to provide experience in research methodology and philosophy.

Prerequisite: Graduate standing

Typically offered in Fall only

NTR 693 Master's Supervised Research (1-9 credit hours)

Instruction in research and research under the mentorship of a member of the Graduate Faculty.

Prerequisite: Master's student

Typically offered in Fall, Spring, and Summer

NTR 695 Master's Thesis Research (1-9 credit hours)

Thesis research

Prerequisite: Master's student

Typically offered in Fall, Spring, and Summer

NTR 696 Summer Thesis Research (1 credit hours)

For graduate students whose programs of work specify no formal course work during a summer session and who will be devoting full time to thesis research.

Prerequisite: Master's student

Typically offered in Summer only

NTR 699 Research In Nutrition (1-9 credit hours)

Original research preparatory to the thesis for Master of Science or Doctor of Philosophy degree.

Prerequisite: Graduate standing

Typically offered in Fall, Spring, and Summer

NTR 701/ANS 701 Protein and Amino Acid Metabolism (3 credit hours)

Study of protein and amino acid metabolism, regulation, dietary requirements and techniques for their investigation in human and other animals.

Prerequisite: BCH 453, ZO 421, a 400-level nutrition course

Typically offered in Spring only

NTR 706/FM 706 Vitamin Metabolism (3 credit hours)

Structures, chemical and physical properties, functions, distribution, absorption, transport, metabolism, storage, excretion, deficiencies, and toxicity of vitamins in humans and domestic animals. Interactions between vitamins and other factors affecting vitamin metabolism or bioavailability as well as the nutritional significance of essential fatty acids and metabolism of prostaglandins, prostacyclins and leukotrienes. Application of knowledge will include critical review of scientific literature, experimental design, and formulation of vitamin supplements.

Prerequisite: ANS(NTR,PO) 415 and BCH 453

Typically offered in Fall only

This course is offered alternate even years

NTR 708 Energy Metabolism (3 credit hours)

Relationship of biochemical and physiological events within the cell, tissue, organ and system with the nutrient needs as sources of energy for productive animal life. Digestion, absorption and metabolism of energy sources. Presentation of processes of energy transformations within living structures in relation to energetics, biological oxidations, coupled reactions, anabolic and catabolic systems, metabolic control, partitioning and efficiency.

Prerequisite: BCH 453 and an introductory NTR course

Typically offered in Fall only

NTR 764/PHY 764/CBS 764 Advances in Gastrointestinal Pathophysiology (3 credit hours)

This course will focus on advanced gastrointestinal physiology and the pathophysiology of diseases of relevance to scientists involved in animal-related research. In particular, the course will cover the pathophysiology of ulceration, infectious diarrhea, ischemia, motility disorders, and inflammatory diseases of the gut. An in-depth review paper will be required based on recent literature regarding a specific gastrointestinal disease.

Prerequisite: PHY 503, PHY 504

Typically offered in Fall only

This course is offered alternate odd years

NTR 775/PO 775 Mineral Metabolism (3 credit hours)

Requirements, function, distribution, absorption, excretion and toxicity of minerals in humans and domestic animals. Interactions between minerals and other factors affecting mineral metabolism or availability. Emphasis on mechanisms associated with mineral functions and the metabolic bases for the development of signs of deficiency.

Prerequisite: ANS(NTR,PO) 415, BCH 451 and ZO 421

Typically offered in Fall only

NTR 790/FM 790 Advanced Feed Formulation (3 credit hours)

Principles of feed and ingredient quality assurance and how to develop a comprehensive quality assurance program. The course will include the development of an approved supplier list, ingredient specifications, feed manufacturing quality assurance procedures, and risk based feed safety programs.

Prerequisite: NTR(FM) 525

Typically offered in Fall only

This course is offered alternate odd years

NTR 794 Special Topics in Nutrition (1-6 credit hours)

The study of special problems and selected topics of current interest in nutrition and related fields.

Typically offered in Fall, Spring, and Summer

NTR 801 Doctoral Seminar (1 credit hours)

Weekly seminars on topics of current interest given by resident faculty members, graduate students and visiting lecturers.

Typically offered in Spring only

NTR 824 Topical Problems In Nutrition (1-6 credit hours)

Analysis of current problems in nutrition. Also entails the scientific appraisal and solution of a selected problem designed to provide training and experience in research.

Prerequisite: Graduate standing or Senior standing

Typically offered in Summer only

NTR 825 Advanced Special Problems In Nutrition (1-6 credit hours)

Directed research in a specialized phase of nutrition designed to provide experience in research methodology and philosophy.

Prerequisite: Graduate standing

Typically offered in Fall only

NTR 885 Doctoral Supervised Teaching (1-3 credit hours)

Teaching experience under the mentorship of faculty who assist the student in planning for the teaching assignment, observe and provide feedback to the student during the teaching assignment, and evaluate the student upon completion of the assignment.

Prerequisite: Doctoral student

Typically offered in Fall and Spring

NTR 890 Doctoral Preliminary Examination (1-9 credit hours)

For students who are preparing for and taking written and/or oral preliminary exams.

Prerequisite: Doctoral student

Typically offered in Fall, Spring, and Summer

NTR 893 Doctoral Dissertation Research (1-9 credit hours)

Instruction in research and research under the mentorship of a member of the Graduate Faculty.

Prerequisite: Doctoral student

Typically offered in Fall, Spring, and Summer

NTR 895 Doctoral Dissertation Research (1-9 credit hours)

Dissertation research.

Prerequisite: Doctoral student

Typically offered in Fall, Spring, and Summer

NTR 896 Summer Dissertation Research (1 credit hours)

For graduate students whose programs of work specify no formal course work during a summer session and who will be devoting full time to thesis research.

Prerequisite: Doctoral student

Typically offered in Summer only

NTR 899 Doctoral Dissertation Preparation (1-9 credit hours)

For students who have completed all credit hour, full-time enrollment, preliminary examination, and residency requirements for the doctoral degree, and are writing and defending their dissertations.

Prerequisite: Doctoral student

Typically offered in Fall, Spring, and Summer