

NUTR - NUTRITION

NUTR 601/ANSC 601 General Animal Nutrition

Credits 3. 3 Lecture Hours. Comparative nutrition of animal species contrasting digestive, metabolic and physiological functions involved in processing and using nutrients. **Prerequisite:** ANSC 303/NUTR 303 or ANSC 318 or equivalent. **Cross Listing:** ANSC 601/NUTR 601.

NUTR 602/ANSC 602 Energetics of Metabolism and Growth

Credits 3. 3 Lecture Hours. Current fundamental concepts in protein and energy metabolism relating to nutrients required for maintenance, growth and development of animals. **Prerequisite:** BICH 410 or approval of instructor. **Cross Listing:** ANSC 602/NUTR 602.

NUTR 610/FSTC 610 Nutritional Pharmacometrics of Food Compounds

Credits 3. 3 Lecture Hours. Introduction into nutritional pharmacokinetics and pharmacodynamics of food compounds; specific examples of toxicological and pharmacological effects of food compounds. **Prerequisite:** NUTR 202, NUTR 203, FSTC 201, CHEM 227, or CHEM 222, or instructor approval. **Cross Listing:** FSTC 610/NUTR 610.

NUTR 613/ANSC 613 Protein Metabolism

Credits 3. 3 Lecture Hours. Basic concepts and recent advances in protein metabolism in animals with emphasis on physiological and nutritional significances; discussion of protein digestion; absorption of peptides; absorption, synthesis and degradation of amino acids; hormonal and nutritional regulation of protein turnover; determination of protein quality and requirements. **Prerequisite:** BICH 411 or BICH 601 or equivalent or approval of instructor. **Cross Listing:** ANSC 613/NUTR 613.

NUTR 614 Fermentation and Gastrointestinal Microbiology

Credits 3. 3 Lecture Hours. Fermentation and gastrointestinal ecosystems in terms of microorganisms present, their activities and requirements and their interactions in a dynamic system. **Prerequisite:** Beginning microbiology and/or biochemistry or approval of instructor. **Cross Listing:** POSC 614 and VTMI 614.

NUTR 617 Experimental Techniques in Meat Science

Credits 3. 1 Lecture Hour. 6 Lab Hours. Methods used in separating and identifying muscle proteins and fats; techniques for determining postmortem changes of muscle tissue as a result of antemortem treatments. **Prerequisite:** ANSC 607/FSTC 607; BICH 411.

NUTR 618/ANSC 618 Lipids and Lipid Metabolism

Credits 3. 3 Lecture Hours. Chemical nature of various classes of lipids and lipid-derived hormones; absorption and metabolism of fatty-acids and lipids; regulation of lipid biosynthesis and obesity; relationship between lipid metabolism and cholesterol homeostasis; lipids as hormones. **Prerequisite:** BICH 410 or approval of instructor. **Cross Listing:** ANSC 618/NUTR 618.

NUTR 632 Nutrition in Disease

Credits 3. 3 Lecture Hours. Human nutritional requirements in health and disease, emphasizing effects of disease states on intake, digestion, absorption, metabolism and excretion of nutrients; relationship of diet to development of certain diseases.

NUTR 640/FSTC 640 Therapeutic Microbiology I

Credits 3. 3 Lecture Hours. Alimentary (gastrointestinal) microbiology including (i) the "normal" intestinal microbiota; (ii) probiotic and prebiotic nutritional supplements; (iii) recombinant pharmabiotics; (iv) gut-associated lymphoid tissue and mucosal immunity; (v) foodborne gastrointestinal pathogens; and (vi) fermented products as functional foods. **Prerequisite:** Undergraduate survey course in microbiology or approval of instructor. **Cross Listing:** FSTC 640.

NUTR 641/ANSC 641 Nutritional Biochemistry I

Credits 3. 3 Lecture Hours. Integration of the intermediary metabolism of glucose, amino acids and lipids with nutrition, physiology and pathophysiology in animals; regulation of metabolic pathways in cells, tissues and the whole body under normal and disease conditions; functions of vitamins and minerals in nutrient metabolism and health. **Prerequisite:** BICH 411 or BICH 604. **Cross Listing:** ANSC 641/NUTR 641.

NUTR 642 Nutritional Biochemistry II

Credits 3. 3 Lecture Hours. Integration of nutrition, biochemistry and other life sciences focusing on nutrients and their needs in healthy and unhealthy individuals; macronutrients and their metabolism and the pertinent regulation; nutrient sensing and signaling pathways; nutritional and hormonal regulation of gene expression; commonly used nutritional and biochemical assays. **Prerequisites:** NUTR 475, BICH 410 or equivalent.

NUTR 645/POSC 645 Nutrition and Metabolism of Vitamins

Credits 3. 3 Lecture Hours. Chemistry and metabolism of the fat soluble and water soluble vitamins and their roles in animals; integrates cellular biochemistry and metabolism of the vitamins in vertebrate animals. **Prerequisites:** POSC 411 or ANSC 303/NUTR 303; BICH 410 or BICH 603. **Cross Listing:** POSC 645/NUTR 645.

NUTR 646 Fundamentals of Space Life Sciences

Credits 3. 3 Lecture Hours. Integrates nutrition, physiology, and radiation biology to define major biological problems in long duration space flight; provide an overview of the problems of bone loss, muscle wasting, and radiation-enhanced carcinogenesis along with potential countermeasures; focus on nutritional interventions and exercise protocols. **Cross Listing:** NUEN 646 and KINE 646.

NUTR 650/POSC 650 Nutrition and Metabolism of Minerals

Credits 3. 3 Lecture Hours. Nutritional significance of minerals in animal metabolism; chemical, biochemical and physiological role of minerals and homeostatic control in animal metabolism. **Prerequisites:** POSC 411 or ANSC 303/NUTR 303; BICH 410 or BICH 603. **Cross Listing:** POSC 650/NUTR 650.

NUTR 651 Nutritional Biochemistry of Fishes

Credits 3. 3 Lecture Hours. Principles of nutritional biochemistry including nutrient metabolism and biochemical energetics with special emphasis on finfish and shell fish. **Prerequisite:** BICH 410 or equivalent.

NUTR 655 Nutrition and Healthy Aging

Credits 3. 3 Lecture Hours. Fusion of biology of aging and geriatric nutrition; different aging theories, pathophysiology of aging and age-related diseases, nutritional needs of older adults, nutritional impacts on lifespan and healthspan and nutritional interventions for healthy aging.

Prerequisite: Graduate classification.

NUTR 669 Experimental Nutrition & Food Science Laboratory

Credits 4. 1 Lecture Hour. 6 Lab Hours. Experimental Nutrition & Food Science Laboratory. Nutritional intervention in animal models of metabolic or emotional disorders; genetic modifications or pathogens in food products; analyses of gene expression and behavior. **Prerequisite:** BICH 432/GENE 432 or GENE 432/BICH 432 recommended; graduate in nutrition or related major.

NUTR 671/FSTC 671 Critical Evaluation of Nutrition and Food Science Literature: Evidence Based Reviews

Credits 3. 3 Lecture Hours. Evaluation of scientific literature, research methods within the literature, and the quality of scientific studies to produce an evidence-based review in areas specific to nutrition and food science. **Prerequisites:** NUTR 202 or NUTR 203; STAT 302; knowledge of nutrition, statistics, and technical writing helpful. **Cross Listing:** FSTC 671/NUTR 671.

NUTR 679 Lipoproteins in Health and Disease

Credits 3. 3 Lecture Hours. Understanding of lipoprotein biology as it relates to nutrient delivery and disease development; emphasis on understanding how structure influences the function of different lipoprotein particles in human and avian systems; opportunity to study individual lipoprotein profiles or those of animals by modern imaging techniques; background in basic lipid biochemistry helpful.

NUTR 681 Seminar

Credits 0-1. 0-1 Other Hours. Oral reports and discussions of current research and developments in nutrition designed to broaden understanding of problems and to stimulate research.

NUTR 684 Professional Internship

Credits 0 to 16. 0 to 16 Other Hours. Experience in application of formal training to a commercial operation under supervision of operations manager and designated faculty member; investigation of matter of mutual interest and report results in a professional paper approved by the graduate committee.

NUTR 685 Directed Studies

Credits 1 to 4. 1 to 4 Other Hours. Directed study of selected problems emphasizing recent developments in research techniques.

NUTR 689 Special Topics in...

Credits 1 to 4. 1 to 4 Other Hours. Special topics in an identified area of nutrition. May be repeated for credit.

NUTR 691 Research

Credits 1 to 23. 1 to 23 Other Hours. Investigations leading to thesis or dissertation in various areas of nutrition.