

**NUTRITION: Suggested Courses for 2019-2020**

Course	Title	Description	Quarter Offered	Unit	Prereqs
ANS 112	Sustainable Animal Agriculture	Current applications of sustainable animal agriculture including the challenges of animal production, animal needs, animal well-being and protection of the environment and resources for future food supply systems. Various scenarios for meeting sustainability objectives are evaluated using computer models.	S	3	BIS 2B or ANS1 (STA 100 rec.)
ANS 126	Equine Nutrition	Includes equine digestion, digestive physiology, diet development and evaluation, and the relationship of the topics to recommended feeding practices and nutritional portfolios.	W, EOY even	3	ANS 15, NUT 115
ANS 128	Agricultural Applications of Linear Programming	Applications of linear programming in agriculture, emphasizing resource allocation problems and decision making. Problems include crop production, ration formulation, and ram management. Hands-on experience in developing linear programs and interpreting the results.	W	4	PLS 21 or consent
ANS 129	Environmental Stewardship in Animal Production Systems	Management principles of environmental stewardship for grazing lands, animal feeding, operations and aquaculture operations; existing regulations, sample analyses, interpretation and utilization of data, evaluation of alternative practices, and policy development.	W, EOY odd	3	BIS2AB, CHE 2AB, and CHE8AB
ANS 140	Management of Laboratory Animals	Laboratory animal management procedures in view of animal physiology, health and welfare, government regulations, and experimental needs. Clinical techniques using rodents and rabbits as models.	F	4	NPB 101/ANS 100
ANS 142	Companion Animal Care and Management	Management and production of companion animals. Integration of the disciplinary principles of behavior, genetics, nutrition, and physiology as related to care of companion animals.	F	4	ANS 42; BIS 101, NPB 101/ANS 100, (ABI103 rec.)
ANS 143	Pig and Poultry Care and Management	Care and management of swine, broilers and turkeys as related to environmental physiology, nutrition and metabolism, disease management and reproduction.	F, EOY odd	4	ANS 41, NUT 115, NPB 101/ANS 100
ANS 144	Beef Cattle and Sheep Production	Genetics, physiology, nutrition, economic and business in beef cattle and sheep production. Resources used, species differences, range and feedlot operations. Emphasis on integration and information needed in methods for management of livestock enterprises.	S	4	ANS 41, NUT 115, or consent (ANG 107 rec.)

ANS 146	Dairy Cattle Production	Scientific principles from genetics, nutrition, physiology and related fields applied to conversion of animal feed to human food through dairy animals. Management and economic decisions are related to animal biology considering the environment and animal well-being.	S	5	NUT 115 or consent (ANG 107 rec.)
ANS 198 (NUT 142)	Companion Animal Nutrition	Applied companion animal nutrition course that will be focused primarily on dogs and cats. This course will include a discussion of the nutritional considerations specifically related to health and longevity of companion animals. Commercial and prescription-type diets will be evaluated with an emphasis on functional ingredients. Additional special topics will include the impact of physiological status and disease on nutrient requirements of the animal and nutrient utilization in the body.	S	4	ABI 102, ANS 42 (NUT 115 rec.)
FST 119	Chemistry and Technology of Milk and Products	Composition, structure, and properties of milk and products derived from milk. Relates chemical, microbiological, and technological principles to commercial practices in processing of milk and its products.	S, EOY odd	4	BIS 2A, BIS102/ABI102, or consent
FST 128/ETX 128	Food Toxicology	Chemistry and biochemistry of toxins occurring in foods, including plant and animal toxins, intentional and unintentional food additives. The assessment of food safety and toxic hazards.	S	3	BIS103/ABI103
MIC 102	Introductory Microbiology	Essentials of microbial biology, emphasizing phylogeny, physiology, genetics, ecology, and pathogenesis. Interactions with other microbes, humans, and the biosphere. Uses of microbes in agriculture and biotechnology.	All	3	BIS 2A, CHE 2B
MIC 103L	Introductory Microbiology Laboratory	Introduction to principles and laboratory methods employed in working with microorganisms. Designed for students requiring microbiology for professional school admission.	All	2	MIC 102, CHE2B
NPB 114	Gastrointestinal Physiology	Gastrointestinal anatomy and physiology. Digestion, secretion, absorption, motility, comparative physiology and pathology. Strong emphasis on neural and hormonal regulation and on cellular mechanisms of secretion and absorption.	F, SuI	3	NPB 101 (BIS103/ABI103 rec.)
NPB 130	Physiology of the Endocrine Glands	Advanced presentation of concepts in endocrinology with emphasis on the role of hormones in reproduction, metabolism, and disease.	F	4	NPB 101/ANS 100

NPB 132	Nature vs. Nurture: Physiological Interactions Among Genes, Nutrients, and Health	Biochemical, physiological, genetic, and nutritional causes of important medical problems such as obesity, anorexia, heart disease and diabetes.	F	3	BIS 2A or consent
NUT 104/ETX 104	Environmental & Nutritional Factors in Cellular Regulation and Nutritional Toxicants	Cellular regulation from nutritional/toxicological perspective. Emphasis: role of biofactors on modulation of signal transduction pathways, role of specific organelles in organization/regulation of metabolic transformation, major cofactor functions, principles of pharmacology/toxicology important to understanding nutrient/toxicant metabolism.	F	4	BIS 101, BIS103/ABI 103
NUT 105	Nutrition and Aging	Role of nutrition in the aging process from both an organismal/cellular perspective, including demographics, theories of aging, nutrition and evolution, nutritional manipulations and life-span extension, and nutrition's impact on the diseases of aging.	S	3	NUT 111AY, ABI103/BIS103
NUT 111AY	Introduction to Nutrition and Metabolism	Introduction to metabolism of protein, fat, and carbohydrate; the biological role of vitamins and minerals; nutrient requirements during the life cycle; assessment of dietary intake and nutritional status.	W	3	CHE 8B, NPB101/ANS 100
NUT 114	Developmental Nutrition	Role of nutritional factors in embryonic and postnatal development.	W	4	BIS 103/ABI103, NUT 111AY, NUT 111B
NUT 115	Animal Nutrition	Analyses and evaluation of feeds, influences of production, processing, and storage methods on nutritive value of feeds. Animal nutrition, diet formulation.	W	4	CHE 8B
NUT 117	Experimental Nutrition	Methods of assessing nutritional status. Application of chemical, microbiological, chromatographics and enzymatic techniques to current problems in nutrition.	F	6	NUT 111AY, NUT 111B, ABI103/BIS103, (MBC 120L rec.)
NUT 122	Ruminant Nutrition and Digestive	Study of nutrient utilization as influenced by the unique aspects of digestion and fermentation in ruminants, both domestic and wild. Laboratories include comparative anatomy, feed evaluation, and	S	4	ABI103/BIS103, BIS 2C, NPB 101/ANS 100

	Physiology	digestion kinetics using fistulated cows, computer modeling, and microbial exercises.			(MAT 16B rec.)
NUT 123	Comparative Animal Nutrition	Comparative nutrition of animals; including laboratory, companion, zoo and wild animals, digestion and metabolic adaptations required for animal species to consume diverse diets ranging from grasses and leaves to nectar to insects and meat. Relation of nutrition to metabolic adaptations and physiological states, including growth, reproduction, and diseases.	S	3	ABI103/BIS103
NUT 123L	Comparative Animal Nutrition Laboratory	Laboratory exercises leading to written reports on establishment of nutritional requirements and formulation of complete diets for laboratory, companion, zoo, and wild animals.	S	1	ABI 103/BIS103, NUT 123 (conc. ok)
NUT 141	Comparative Nutrition and Metabolism	Comparative gastrointestinal tract of livestock animals; Basic functions of major nutrient classes; Nutrient digestibility and absorption; Nutrient Metabolism.	S	4	ABI 102, ABI 103, and NUT 115 rec.
VMB 101Y	Principles of Pharmacology and Toxicology	This <b>hybrid</b> course provides training in core concepts of pharmacological and toxicological science. Develop higher-order problem solving and critical thinking skills.	S	3	Upper Div standing, CHE8AB, BIS 2ABC
VMB 101V	Principles of Pharmacology and Toxicology	This <b>virtual</b> course provides training in core concepts of pharmacological and toxicological science. Develop higher-order problem solving and critical thinking skills.	F	3	Upper Div standing, CHE8AB, BIS 2ABC