

Courses

NTRN 201. Nutrition. 3 Units.

The nutrients, their functions, food sources, and factors affecting human needs throughout life.

NTRN 328. Child Nutrition, Development and Health. 3 Units.

The relationship between nutrition and physical/cognitive growth and development of the child from the prenatal period through adolescence, including individuality, maturation and biological needs. Nutritional influences (nutrient requirements, food choices, and nutritional/feeding problems) and effects on health are emphasized. Prereq: [NTRN 201](#).

NTRN 341. Food as Medicine: How what we eat influences how we feel, think, and our health status. 3 Units.

This course will discuss key aspects of the interplay between food and health/wellness and in particular food synergy - interactions among dietary components and the effects on health. What are "whole foods" vs. basic nutrients? What are the most common nutrient deficiencies in men, women and children, including the elderly? Students will learn to interpret dietary recommendations/guidelines and which foods are used to improve digestion, optimize cardiovascular health and immune function, and help prevent cancer. Basic discussion of importance of gut micro-flora. Diet and body weight; also pros and cons of different dieting strategies. Increasing awareness of "culinary medicine" (i.e. how food acts as an integrated therapy). How what we eat influences how we feel, think and our general health status. There is an integrated culinary experience. Prereq: [NTRN 201](#) or requisites not met permission.

NTRN 342. Food Science. 3 Units.

Chemical, physical and biological properties of food constituents and their interactions in food preparation and processing and practical application of processing methods and their effect on nutritional quality and acceptability. Prereq: [CHEM 106](#).

NTRN 342L. Food Science Lab. 2 Units.

Apply knowledge of the physical, chemical, and biological aspects of food and food ingredients to actual experimentation with foods. Acquire understanding of how food ingredients and their interactions and the preparation process influence acceptability of the final food product. Enhance familiarity with safe food handling during preparation and post-preparation. Prereq: [CHEM 106](#). Coreq: [NTRN 342](#).

NTRN 343. Dietary Patterns. 3 Units.

Examination of the food supply in the United States as it is affected by production, processing, marketing, government programs, regulation, and consumer selection. Nutritional evaluation of dietary patterns of different cultures. Recommended preparation: [NTRN 201](#) or consent.

NTRN 351. Food Service Systems Management. 3 Units.

The application of organizational theory and skills in the preparation and service of quantity food. Laboratory experience in professional food services are included. Graduate students will analyze one aspect of food service management in depth. Offered as [NTRN 351](#) and [NTRN 451](#). Prereq: Nutrition major or consent of instructor.

 **NTRN 359. Diabetes Prevention and Management. 3 Units.**

In this course, we will explore the diabetes epidemic, its effects on the healthcare system, and strategies for prevention. The pathophysiology of the disease will be examined as well as environmental factors leading to the increase in diagnoses. Comorbid conditions and acute and chronic complications of diabetes and hyperglycemia will be addressed. Rationale for current therapeutic strategies will be explored, including the use of blood glucose monitoring, physical activity, nutrition counseling, oral medications, and insulin therapy. Patient education and health literacy will be studied in the context of patient centered goal setting. Requirements for developing a Diabetes Self-Management Education Program will be discussed. Community program development will be examined in the context of population-based prevention strategies. Offered as [NTRN 359](#) and [NTRN 459](#). Prereq: [NTRN 201](#) and Junior or Senior Status.

 **NTRN 360. Guided Study in Nutrition Practice. 3 Units.**

Methods for the provision of nutrition services to individuals and groups. Principles of professional practice including ethics, standards, and regulatory issues. Recommended preparation: [NTRN 363](#) or [NTRN 433](#) or consent. Prereq: [NTRN 201](#) and [NTRN 342](#) or MS in Nutrition or MS in Public Health Nutrition.

 **NTRN 361. Energy Dysregulation: From Obesity to Anorexia. 3 Units.**

Energy imbalance and the implications on health will be explored in this course. Key concepts covered in this class include: 1. Energy imbalance refers to positive and negative states of energy balance and occurs when energy intake does not match energy expended in metabolic processes, daily living activities, and physical activity; 2. Obesity is a result of chronic positive energy balance whereas anorexia nervosa is a condition of chronic negative energy balance; 3. Energy metabolism is controlled by a complex array of neural and hormonal signaling; 4. Energy imbalance disrupts the neural and hormonal signaling pathways of energy metabolism resulting in unfavorable health consequences such as pro-inflammatory state, oxidative stress, immune dysregulation, menstrual dysfunction, sarcopenia, and low bone mineral density; and 5. Exercise training can impact energy imbalance health-related outcomes. Learning Outcomes: Students will be able to 1. define energy balance and explain the components of energy expenditure; 2. define disordered eating, female athlete triad, and disordered eating; 3. explain the relationship among energy intake, energy expenditure, and body composition in energy imbalance; 4. describe alterations in skeletal muscle and adipose physiology in energy imbalance; 5. diagram neural control of feeding and energy homeostasis and hormonal control of energy metabolism; 6. explain the neural and hormonal changes that occur in chronic energy imbalance and describe current theories in how it results in menstrual dysfunction, inflammatory response, oxidative stress, immune dysregulation, sarcopenia, and low bone mineral density; and 7. explain how exercise training can influence inflammatory response, oxidative stress, immune function, and musculoskeletal health in energy imbalance. Offered as [NTRN 361](#) and [NTRN 461](#). Prereq: [NTRN 201](#) or requisites not met permission.

 **NTRN 362. Exercise Physiology and Macronutrient Metabolism. 3 Units.**

The purpose of this course is to provide students with the knowledge of theoretical and applied concepts of exercise physiology. Students will gain an understanding of the acute and chronic physiological responses and adaptations of the cardiovascular, metabolic, hormonal, and neuromuscular systems in response to exercise. Additional topics include factors effecting performance, assessing cardiorespiratory and muscular fitness, designing exercise programs for health and wellness, special populations, and athletes, environmental considerations and nutrition's role in sport and exercise performance. Offered as [NTRN 362](#) and [NTRN 462](#). Prereq: [NTRN 201](#) and [BIOL 216](#).

 **NTRN 363. Human Nutrition I: Energy, Protein, Minerals. 3 Units.**

Chemical and physiological properties of specific nutrients, including interrelationships and multiple factors, in meeting nutritional needs throughout the life cycle. Prereq: [CHEM 223](#) and [BIOL 216](#) (3 or 4 cr. hrs.).

 **NTRN 364. Human Nutrition II: Vitamins. 3 Units.**

Chemical and physiological properties of vitamins, including interrelationships and multiple factors, in meeting nutritional needs throughout the life cycle. Prereq: [NTRN 363](#).

 **NTRN 365. Nutrition for the Prevention and Management of Disease: Pathophysiology. 4 Units.**

Interplay among etiology, metabolic perturbations, pathophysiology, clinical signs and symptoms, and nutrition principles for the prevention and management of disease. Prereq: [NTRN 363](#) and [BIOC 307](#) or equivalent or consent of instructor.

 **NTRN 366. Nutrition for the Prevention and Management of Disease: Clinical Applications. 3 Units.**

Application of nutrition principles and knowledge for the prevention and management of disease. Case studies and other educational approaches and techniques will be used. Course includes evidence-based assessments and interpretation of key data (biochemical, dietary, physical) to develop nutritional interventions. Coreq: [NTRN 365](#).

 **NTRN 367. Nutrition Strategies and Wellness Programming. 3 Units.**

Wellness and its implication on nutritional choices will be explored in this class. Key concepts covered in this class include: 1. Overall well-being extends beyond smart dietary choices including social, emotional, spiritual, occupational, intellectual, and physical wellness. 2. The interrelationship among the wellness areas can alter adherence to a healthy diet. 3. Cultural differences in wellness exist and have an impact on nutritional choices. 4. Nutritional strategies must be individualized taking into account all aspects of wellness and cultural differences. 5. Interprofessional teams that include experts from each area of wellness are essential to provide optimal health care to individuals. Prereq: [NTRN 201](#).

 **NTRN 371. Special Problems. 1 - 3 Unit.**

Independent reading, research, or special projects supervised by a member of the nutrition faculty. Prereq: Junior or senior standing.

 **NTRN 372. Special Problems. 1 - 3 Unit.**

Independent reading, research, or special projects supervised by a member of the nutrition faculty. Prereq: Junior or senior standing.

 **NTRN 388. Seminar in Sports Nutrition. 3 Units.**

Study of energy and nutrient needs to support recreational exercise and competitive athletics, dietary supplements and specific foods and beverages that are marketed to athletes, and how nutrition can provide optimal muscle development, recovery and sports performance. Prereq: Junior or senior standing.

 **NTRN 390. Undergraduate Research. 3 - 9 Units.**

Guided laboratory research in nutritional biochemistry or molecular nutrition under the sponsorship of a nutrition faculty member.

 **NTRN 397. SAGES Capstone Proposal Seminar. 3 Units.**

In this departmental seminar course, students will conceptualize, develop and prepare a written plan, known as the "Capstone Proposal," for their senior Capstone project ([NTRN 398](#): Senior Capstone Experience). Discussion will include, but not be limited to basic research principles, different types of research, ethics and IRB procedures. The Capstone Proposal shall include the project design, aims, methodology, budget, data analysis and presentation. Upon completion of this course, students will have confirmed student/Capstone advisor and, if applicable, mentor relationships, written a Capstone proposal and given an oral presentation of their proposal at a departmental colloquium. Counts as SAGES Departmental Seminar.

Prereq: [NTRN 201](#) and [NTRN 342](#).

 **NTRN 398. SAGES Senior Capstone Experience. 3 Units.**

Students will implement their "Capstone Proposal" projects as designed in [NTRN 397](#): Capstone Proposal Seminar. Pertinent research activities will depend on the nature of the student's "Capstone Proposal" project. The student will meet regularly with their Capstone advisor, at least twice monthly, to provide progress reports, discuss the project, and for critique and guidance. By the end of this course, the student will have completed their SAGES Senior Capstone research project and presented their project results/findings orally at the Senior Capstone Fair and at a departmental colloquium. Counts as SAGES Senior Capstone.

Prereq: [NTRN 397](#).

 **NTRN 399. Senior Project. 3 Units.**

Formal investigation of a topic in nutrition culminating in a paper and oral presentation. Requires definition of a problem, evaluation of the scientific literature and delineation of problem-solving approaches. Recommended preparation: Twenty-one hours of Nutrition.

 **NTRN 401. Nutrition for Community and Health Care Professionals. 2 Units.**

This course will focus on understanding how diet and nutrition impact health and wellness throughout the life cycle. There are core concepts in human nutrition that all health care providers should understand to optimize their care of individuals, themselves, and the community. These core concepts are the focus of this course.

 **NTRN 433. Advanced Human Nutrition I. 4 Units.**

Emphasis on reading original research literature in energy, protein and minerals with development of critical evaluation and thinking skills. Recommended preparation: [NTRN 201](#) and [CHEM 223](#) and BIOL 348 or equivalent.

 **NTRN 434. Advanced Human Nutrition II. 3 Units.**

Emphasis on reading original research literature on vitamins with development of critical evaluation and thinking skills. Recommended preparation: [NTRN 433](#) or consent.

 **NTRN 435. Nutrition during Pregnancy and Lactation. 3 Units.**

Study of current research literature on nutrition for pregnancy and lactation including nutrient requirements, nutrition assessment, and nutrition intervention. Prereq: Graduate Student in Nutrition or Public Health Nutrition or ([NTRN 363](#) and [NTRN 364](#)) or requisites not met permission.

 **NTRN 436. Pediatric Nutrition. 3 Units.**

This course will focus on understanding the nutritional needs of infants, children and adolescents. Evidence based guidelines will be used as we discuss best clinical practice for the management of pediatric nutrition issues. Anthropometric measurements used in growth assessment will be reviewed. Nutrient requirements for each stage of development will be explored with a specific focus on micronutrients relevant to pediatrics such as fluoride, iron, calcium and vitamin D. Abnormal growth resulting in malnutrition and obesity will be examined with a focus on prevention, diagnosis and treatment. Skills necessary to complete a pediatric nutrition assessment will be reviewed with opportunities to practice and demonstrate competency. Prereq: [NTRN 435](#).

 **NTRN 437. Evaluation of Nutrition Information for Consumers. 3 Units.**

Reading and appraisal of food and nutrition literature written for the general public, including books, magazines, newsletters. Prereq: Graduate standing and Nutrition or Public Health Nutrition major or consent of instructor.

 **NTRN 438. Dietary Supplements. 3 Units.**

An examination of dietary supplements specific to health promotion and disease prevention/treatment throughout the life cycle. Topics and concepts include regulation,

controversies, safety, efficacy, and the surrounding scientific evidence for dietary supplement use. Prereq: [NTRN 364](#) or requisites not met permission.

 **NTRN 439. Food Behavior: Physiological, Psychological and Environmental Determinants. 3 Units.**

Good dietary habits are associated with improved population health. Despite this, a large proportion of individuals do not meet current dietary recommendations and there are significant disparities between groups based on sociodemographic characteristics. Why is this? Traditional views on this question focused solely on individual decision making without taking into account the complex influence of biology, social forces, and environment on dietary behavior. This course will introduce students to the major influences on dietary behavior and their interactions and modifying factors in the context of the socioecological model.

 **NTRN 440. Nutrition for the Aging and Aged. 3 Units.**

Consideration of the processes of aging and needs which continue throughout life. The influences of food availability, intake, economics, culture, physical and social conditions and chronic disease as they affect the ability of the aged to cope with living situations. Recommended preparation: Nutrition major or consent of instructor.

 **NTRN 446. Advanced Maternal Nutrition: Special Topics. 3 Units.**

Analysis of the problems commonly associated with high-risk pregnancies and fetal outcome. Discussion of causes, mechanisms, management and current research. Recommended preparation: [NTRN 435](#) or consent.

 **NTRN 451. Food Service Systems Management. 3 Units.**

The application of organizational theory and skills in the preparation and service of quantity food. Laboratory experience in professional food services are included. Graduate students will analyze one aspect of food service management in depth. Offered as [NTRN 351](#) and [NTRN 451](#). Prereq: Nutrition major.

 **NTRN 452. Nutritional Biochemistry and Metabolism. 3 Units.**

Mechanisms of regulation of pathways of intermediary metabolism; amplification of biochemical signals; substrate cycling and use of radioactive and stable isotopes to measure metabolic rates. Recommended preparation: [BIOC 307](#) or equivalent. Offered as [BIOC 452](#) and [NTRN 452](#).

 **NTRN 454. Isotope Tracer Methodology. 3 Units.**

Stable and radioactive isotopes in metabolic research concentrating on the design of in-vitro and in-vivo investigative protocols using mostly stable isotopes and mass spectrometric analysis; critical interpretation of data from the recent literature; and pathway identification and kinetics. Recommended preparation: [BIOC 407](#).

 **NTRN 455. Molecular Nutrition. 3 Units.**

Nutrient control of gene expression in mammalian cells and deregulation of expression of these genes. The molecular basis of nutrition-related diseases, such as diabetes mellitus, PKU, and LDL-receptor deficiency, will be discussed. The application of genetic manipulation to metabolism and nutrition will be evaluated. Recommended preparation: [BIOC 407](#).

Prereq: [BIOC 407](#) or Requisites Not Met permission.

NTRN 459. Diabetes Prevention and Management. 3 Units.

In this course, we will explore the diabetes epidemic, its effects on the healthcare system, and strategies for prevention. The pathophysiology of the disease will be examined as well as environmental factors leading to the increase in diagnoses. Comorbid conditions and acute and chronic complications of diabetes and hyperglycemia will be addressed. Rationale for current therapeutic strategies will be explored, including the use of blood glucose monitoring, physical activity, nutrition counseling, oral medications, and insulin therapy. Patient education and health literacy will be studied in the context of patient centered goal setting. Requirements for developing a Diabetes Self-Management Education Program will be discussed. Community program development will be examined in the context of population-based prevention strategies. Offered as [NTRN 359](#) and [NTRN 459](#). Prereq: Graduate Standing.

NTRN 460. Sports Nutrition. 3 Units.

Study of the relationships of nutrition and food intake to body composition and human performance. Laboratory sessions include demonstrations of body composition and fitness measurements and participation in a research project. Recommended preparation: [NTRN 363](#) or [NTRN 433](#) or consent.

NTRN 461. Energy Dysregulation: From Obesity to Anorexia. 3 Units.

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 **NTRN 462. Exercise Physiology and Macronutrient Metabolism. 3 Units.**

The purpose of this course is to provide students with the knowledge of theoretical and applied concepts of exercise physiology. Students will gain an understanding of the acute and chronic physiological responses and adaptations of the cardiovascular, metabolic, hormonal, and neuromuscular systems in response to exercise. Additional topics include factors effecting performance, assessing cardiorespiratory and muscular fitness, designing exercise programs for health and wellness, special populations, and athletes, environmental considerations and nutrition's role in sport and exercise performance. Offered as [NTRN 362](#) and [NTRN 462](#). Prereq: Nutrition Major.

 **NTRN 516. Seminar in Dietetics I. 4 Units.**

Study of evidence-based guidelines for dietetic practice in medical nutrition therapy. Emphasis on life cycle stages and common disease states that require specialized nutrition care. Enrollment restricted to those accepted into Case Coordinated Dietetic Internship/Master Degree Program.

 **NTRN 517. Seminar in Dietetics II. 4 Units.**

Study of scientific basis for clinical and community nutrition practice and developments in food service systems management. Recommended preparation: Dietetic internship.

 **NTRN 528. Introduction to Public Health Nutrition. 3 Units.**

Philosophy, objectives, organization, and focus of government and voluntary agencies with emphasis on nutrition components. Recommended preparation: Public health nutrition majors only. Prereq: Public health nutrition students and graduate nutrition students only.

 **NTRN 529. Nutritional Epidemiology. 3 Units.**

This course uses epidemiology as a tool for assessing potential causal associations between dietary excesses, deficiencies and imbalances to the prevalent chronic diseases. It addresses the epidemiologic aspects of nutrition related chronic diseases, for example, the multi-factorial nature of etiology. Recommended preparation: Statistics and Public Health Nutrition students only.

 **NTRN 530. Public Health Nutrition. 3 Units.**

Analysis of public health programs in government and voluntary health agencies and the effect of legislation. Emphasis on integration with other disciplines working in public health settings and the role of a public health nutritionist.

 **NTRN 531. Public Health Nutrition Field Experience. 1 - 6 Unit.**

Individually planned public health experience. May be concurrent with course work in local agencies or in blocks of full-time work with a city, county, or state health agency. Prereq: Open to public health nutrition students only. Consent of instructor.

 **NTRN 532A. General Nutrition Care. 1 - 3 Unit.**

Individually arranged clinical experience.

 **NTRN 532C. Specialized Public Health Nutrition Field Experience. 1 - 3 Unit.**

Individually arranged clinical experience. Prereq: Public Health Nutrition students only. Consent of instructor.

 **NTRN 532E. Clinical Research: Methods in Nutrition and Metabolism. 3 Units.**

Individually arranged.

 **NTRN 533. Nutritional Care of Neonate. 3 Units.**

Nutritional assessment and management of high-risk newborns with emphasis on prematurity and low birth weight. Review of current literature coordinated with clinical experience in the neonatal intensive care unit. Issues on follow-up included. Recommended preparation: [NTRN 435](#) or consent.

 **NTRN 534. Advanced Public Health Nutrition Field Experience. 1 - 6 Unit.**

Individually planned advanced public health experience. Prereq: Open to public health nutrition students only.

 **NTRN 550A. Advanced Community Nutrition. 3 Units.**

Development of skills needed by the community dietitian. Emphasis on effective tools for service development and delivery. Recommended courses of action for the professional. Prereq: Open to nutrition graduate students and senior undergraduate nutrition majors only.

 **NTRN 551. Seminar in Advanced Nutrition. 1 Unit.**

Ph.D. students meet weekly to discuss topical journal articles. Students gain experience in critical evaluation of research and develop presentation/communication skills. Discussion of research integrity and ethics. Students participate in departmental seminars with invited speakers.

 **NTRN 561. Investigative Methods in Nutrition. 1 - 4 Unit.**

Research methods appropriate for nutrition. Methods for conducting research in nutrition and food sciences, food service management and dietetics. Designing research proposals. Prereq: Nutrition major.

 **NTRN 601. Special Problems. 1 - 18 Unit.**

 **NTRN 651. Thesis M.S.. 1 - 18 Unit.**

 **NTRN 701. Dissertation Ph.D.. 1 - 9 Unit.**

Prereq: Predoctoral research consent or advanced to Ph.D. candidacy milestone.