Nutritional Science

Bachelor of Science (BS)

The Department of Nutritional Sciences and Toxicology offers three undergraduate major program emphases: Physiology and Metabolism, Dietetics, and Molecular Toxicology leading to a Bachelor of Science (BS) degree.

Both the Nutritional Science and Molecular Toxicology majors offer ideal preparation for medical school and other health careers such as pharmacy and dentistry. Many of the required pre-med courses are part of the curriculum. Graduates who have pursued medicine find that the programs have informed their medical studies and have helped them to sustain and promote good health as professionals.

This is an exciting time to be exploring the sciences of nutrition and toxicology. The media have highlighted many stories on questions surrounding the role of diet in aging and proper development, the safety of genetically modified foods, the links between cancer and chronic diseases with diet, and the problems of malnutrition in much of the world.

The Department's research and curriculum cover a breadth of topics from the delivery of nutrients from foods to mammalian cells, to the benefits and hazards of chemical agents as well as the cultural and socio-economic determinants of human diets and the development of programs and policies to address human and environmental health and safety.

Overview of Emphases

For general information regarding the different emphases within the Nutritional Sciences major, please see below. For further information regarding the different major requirements for each, please see the Major Requirements tab on this page.

Physiology and Metabolism

This emphasis provides a strong foundation in the biological and chemical sciences. The advanced course work focuses on the biochemical and physiological study of nutrient utilization. The Physiology & Metabolism specialization explores the following topics: Delivery of nutrients from foods to cells and the function of nutrients in energy; metabolism; the cellular and molecular regulatory mechanisms by which humans respond metabolically to changes in the nutritional environment; dietary patterns causing nutrient imbalances and the effect these imbalances have on function and health of humans; and the methodological and conceptual processes of nutrition and food science laboratory research.

Dietetics

This program prepares students for a career as a Registered Dietitian (RD). RD's translate the science of nutrition into practical applications for individuals and groups in clinical, food service, or community settings. Graduates of this program must also complete a Dietetic Internship and pass a national examination in order to become an RD.

The curriculum for Dietetics provides an excellent foundation in the biological and chemical sciences and a pre -professional focus emphasizing the application of nutrition through dietetic practice. The mission of the Dietetics program, also called the Didactic Program in Dietetics (DPD), is to prepare dietitians for positions of leadership in health care, education, industry, government, and community health, as well as in professional organizations. The program fills a community need for highly trained nutrition professionals, while providing the academic background for graduate study in nutrition or related fields. The program is dedicated to excellence in intellectual development, to development of a professional inquiring attitude, and to equality of opportunity.

Graduates of this program receive a pre-professional verification statement and are eligible to apply to supervised practice programs in which students will receive practical training in varied aspects of dietetic practice. Such programs are generally nine to twelve months in length. The dietetic program director provides assistance in the application process for supervised practice programs. Upon satisfactory completion of (1) the academic course work and (2) a post-Baccalaureate program of supervised practice, the student is eligible to take the nationally administered Registration Examination. Once this exam is passed, the RD credential is earned.

The Didactic Program in Dietetics at UC Berkeley is currently granted accreditation by the Accreditation Council for Education in Nutrition and Dietetics Education (ACEND) of the Academy of Nutrition and Dietetics, 120 South Riverside Plaza, Suite 2000, Chicago, IL 60606, (312) 899-0040 ext. 5400.

Molecular Toxicology

This major combines a strong foundation in the biological and chemical sciences with specialized advanced course work focusing on the hazardous and beneficial effects of natural and human-made toxic agents. From industrially produced environmental contaminants and designer drugs to naturally occurring herbs and food products, this field of study applies molecular and computational methods to better understand how these agents interact with living organisms and what should be done to ensure human health and safety.

Admission to the Major

Freshman students may apply directly to the major, or they may select the College of Natural Resource's undeclared option and declare the major by the end of their fourth semester. For further information regarding how to declare the major after admission including information on a change of major or change of college, please see the College of Natural Resources Undergraduate Student Handbook (http://www.cnr.berkeley.edu/site/forms/oisa/undergrad_handbook.pdf) .

Honors Program

Students who are interested in the honors program in Nutritional Science or Molecular Toxicology should apply during their junior or senior year. Students must have a 3.6 grade point average (GPA) in order to be eligible for the Honors Program. The honors program is individual research, NUSCTX H196, for two semesters under the supervision of a faculty member. The supervised independent honors research is specific to aspects of the nutritional sciences and toxicology major, followed by an oral presentation, and written report. Acceptance in the CNR honors program is required through an application process. Please contact the CNR Office of Instruction and Student Affairs in 260 Mulford Hall.

Minor Program

The Department offers a minor program in Nutritional Science. The course work for the minor addresses topics in Human Nutrition and Nutrient Function. Elective options range from Nutrition in the Community to Metabolic Regulation to Human Diet. The minor is best suited for students already pursuing a bioscience degree as a background in

chemistry, organic chemistry, biology and biochemistry is necessary to be prepared to do upper division work in this field. For information regarding how to declare the minor, please contact the Department.

Other Minor offered by the Department of Nutritional Sciences and Toxicology

Toxicology (http://guide.berkeley.edu/archive/2014-15/undergraduate/degree-programs/toxicology)

In addition to the University, campus, and college requirements, listed on the College Requirements tab, students must fulfill the below requirements specific to their major program.

General Guidelines

1. All courses taken to fulfill the major requirements below must be taken for graded credit, other than courses listed which are offered on a *Pass/No Pass* basis only. Other exceptions to this requirement are noted as applicable.
2. A minimum cumulative grade point average (GPA) of 2.0 is required.
3. A minimum GPA of 2.0 in upper-division major requirements is required.
4. At least 15 of the 36 required upper-division units must be taken in the College of Natural Resources (except for students majoring in Environmental Economics and Policy; please see the EEP major adviser for further information).
5. A maximum of 16 units of Independent Study (courses numbered 97, 98, 99, 197, 198, and 199) may count toward graduation, with a maximum of 4 units of Independent Study per semester.
6. No more than 1/3 of the total units attempted at UC Berkeley may be taken *Pass/No Pass*. This includes units in the Education Abroad Program and UC Intercampus Visitor or Exchange Programs.
7. A maximum of 4 units of Physical Education courses will count toward graduation.

For information regarding residence requirements and unit requirements, please see the College Requirements tab.

Dietetics Emphasis

The curriculum below must be completed within two years of declaring the Dietetics specialization, unless a petition has been approved.

Lower-division Requirements

Select one sequence from the following:

MATH 16A & STAT 2	Analytic Geometry and Calculus and Introduction to Statistics	
MATH 1A & STAT 2	Calculus and Introduction to Statistics	
MATH 10A & MATH 10B	Methods of Mathematics: Calculus, Statistics, and Combinatorics and Methods of Mathematics: Calculus, Statistics, and Combinatorics	
CHEM 1A & 1AL	General Chemistry and General Chemistry Laboratory	4
CHEM 3A & 3AL	Chemical Structure and Reactivity and Organic Chemistry Laboratory	5
CHEM 3B & 3BL	Chemical Structure and Reactivity and Organic Chemistry Laboratory	5
NUSCTX 10	Introduction to Human Nutrition	3
MCELLBI 32 & 32L	Introduction to Human Physiology and Introduction to Human Physiology Laboratory	5
BIOLOGY 1A & 1AL	General Biology Lecture and General Biology Laboratory	5

Upper-division Requirements

MCELLBI 102	Survey of the Principles of Biochemistry and Molecular Biology	4
NUSCTX 103	Nutrient Function and Metabolism	3
NUSCTX 104	Human Food Practices	2
NUSCTX 108A	Introduction and Application of Food Science	3
NUSCTX 108B	Application of Food Science Laboratory	1
NUSCTX 135	Food Systems Organization and Management	4
NUSCTX 145	Nutrition Education and Counseling	2
NUSCTX 160	Metabolic Bases of Human Health and Diseases	4
NUSCTX 161A	Medical Nutrition Therapy	4
NUSCTX 161B	Medical Nutrition Therapy II	4
NUSCTX 166	Nutrition in the Community	3
NUSCTX 192	Junior Seminar in Dietetics	1
NUSCTX 194	Senior Seminar in Dietetics	2
PB HLTH 162A	Public Health Microbiology [1]	3
UGBA 102A	Introduction to Financial Accounting [1]	3
UGBA 105	Leading People	3

[1] PB HLTH 162A and UGBA 102A are optional for students who have taken equivalent lower-division accounting courses at a community college.

Molecular Toxicology Emphasis

Lower-division Requirements

Select one sequence from the following: 8-10

MATH 16A & MATH 16B & STAT 2	Analytic Geometry and Calculus and Analytic Geometry and Calculus and Introduction to Statistics	
MATH 1A & STAT 2	Calculus and Introduction to Statistics	
MATH 10A & MATH 10B	Methods of Mathematics: Calculus, Statistics, and Combinatorics and Methods of Mathematics: Calculus, Statistics, and Combinatorics	
CHEM 1A & 1AL	General Chemistry and General Chemistry Laboratory	4
CHEM 3A & 3AL	Chemical Structure and Reactivity and Organic Chemistry Laboratory	5
CHEM 3B & 3BL	Chemical Structure and Reactivity and Organic Chemistry Laboratory	5
PHYSICS 8A	Introductory Physics	4

NUSCTX 11	Introduction to Toxicology	3
MCELLBI 32 & 32L	Introduction to Human Physiology and Introduction to Human Physiology Laboratory	5
BIOLOGY 1A & 1AL	General Biology Lecture and General Biology Laboratory	5

Upper-division Requirements

MCELLBI 102	Survey of the Principles of Biochemistry and Molecular Biology	4
MCELLBI 104	Genetics, Genomics, and Cell Biology	4
or INTEGBI 141	Human Genetics	
PLANTBI/ MCELLBI C112/ PB HLTH 162A	General Microbiology	4
Select one Microbiology lab from the following:		
PLANTBI/ MCELLBI C112L	General Microbiology Laboratory [1]	
PB HLTH 162L	Public Health Microbiology Laboratory	
NUSCTX 110	Toxicology	4
NUSCTX 121	Computational Toxicology	3
NUSCTX 171	Nutrition and Toxicology Laboratory	4
NUSCTX 193	Introduction to Research in Toxicology	1
Electives: Select Additional courses from the following to bring the unit total to 36 upper-division units:		
CIV ENG 114	Environmental Microbiology	
CIV ENG 115	Water Chemistry	
ESPM 100	Environmental Problem Solving	
ESPM 119	Chemical Ecology	
ESPM 126	Course Not Available	
ESPM 162	Bioethics and Society	
ESPM C180	Air Pollution	
INTEGBI 117	Medical Ethnobotany	
INTEGBI 131	General Human Anatomy	
INTEGBI 152	Environmental Toxicology	
NUSCTX 103	Nutrient Function and Metabolism	
NUSCTX C114/ ESPM C148	Pesticide Chemistry and Toxicology	
NUSCTX 160	Metabolic Bases of Human Health and Diseases	
NUSCTX 115	Principles of Drug Action	
NUSCTX H196	Honors Research	
NUSCTX 199	Supervised Independent Study and Research	
PB HLTH 150A	Introduction to Epidemiology and Human Disease	
PB HLTH 150B	Introduction to Environmental Health Sciences	
PB HLTH 170B	Toxicology	
UGIS 192C	Supervised Research: Biological Sciences	
Other INTEGBI, MCELLBI, & PLANTBI lecture or lab courses also accepted		

[1] Students are required to take a lab course in physiology or microbiology (e.g. MCELLBI 32L or PLANTBI C112L). Students may opt to take the accompanying lab course with MCELLBI 32 as a lower-division student or choose to take an accompanying lab with your choice for microbiology as an upper-division student.

Physiology and Metabolism Emphasis

Lower-division Requirements

Select one sequence from the following:		8-10
MATH 16A & MATH 16B & STAT 2	Analytic Geometry and Calculus and Analytic Geometry and Calculus and Introduction to Statistics	
MATH 1A & STAT 2	Calculus and Introduction to Statistics	
MATH 10A & MATH 10B	Methods of Mathematics: Calculus, Statistics, and Combinatorics and Methods of Mathematics: Calculus, Statistics, and Combinatorics	
CHEM 1A & 1AL	General Chemistry and General Chemistry Laboratory	4
CHEM 3A & 3AL	Chemical Structure and Reactivity and Organic Chemistry Laboratory	5
CHEM 3B & 3BL	Chemical Structure and Reactivity and Organic Chemistry Laboratory	5
PHYSICS 8A	Introductory Physics	4
NUSCTX 10	Introduction to Human Nutrition	3
MCELLBI 32 & 32L	Introduction to Human Physiology and Introduction to Human Physiology Laboratory	5
BIOLOGY 1A & 1AL	General Biology Lecture and General Biology Laboratory	5

Upper-division Requirements [1]

MCELLBI 102	Survey of the Principles of Biochemistry and Molecular Biology	4
NUSCTX 103	Nutrient Function and Metabolism	3
NUSCTX 160	Metabolic Bases of Human Health and Diseases	4
NUSCTX 170	Experimental Nutrition Laboratory	4
NUSCTX 190	Introduction to Research in Nutritional Sciences	1
Electives: Select 20 units from the Approved Electives List:		
NUSCTX 104	Human Food Practices	
NUSCTX 108A	Introduction and Application of Food Science	
NUSCTX 110	Toxicology	
NUSCTX C114	Pesticide Chemistry and Toxicology	
NUSCTX 115	Principles of Drug Action	
NUSCTX 161A	Medical Nutrition Therapy	
NUSCTX 161B	Medical Nutrition Therapy II	
NUSCTX 166	Nutrition in the Community	
NUSCTX 193	Introduction to Research in Toxicology	
NUSCTX H196	Honors Research	
NUSCTX 199	Supervised Independent Study and Research	
PLANTBI C112	General Microbiology	
or PB HLTH 16	Public Health Microbiology	
PLANTBI C114	Introduction to Comparative Virology	
INTEGBI 117	Medical Ethnobotany	

INTEGBI 123AL	Exercise Physiology with Laboratory
INTEGBI 128	Course Not Available
INTEGBI 131	General Human Anatomy
INTEGBI 140	Biology of Human Reproduction
MCELLBI 104	Genetics, Genomics, and Cell Biology
MCELLBI 130A	Cell and Systems Biology
MCELLBI 132	Biology of Human Cancer
MCELLBI 135A - MCELLBI 135V	
PB HLTH 170B	Toxicology
UGIS 192C	Supervised Research: Biological Sciences
Other INTEGBI, MCELLBI, PLANTBI, and CHEM lecture or lab courses also accepted	

[1] Students can choose up to 10 units of Dietetic courses from the Approved Elective List to substitute for the Upper-division non-elective requirements: NUSCTX 104, NUSCTX 108A, NUSCTX 161A, NUSCTX 161B, and NUSCTX 166.

Students who have a strong interest in an area of study outside their major often decide to complete a minor program. These programs have set requirements and are noted officially on the transcript in the memoranda section, but they are not noted on diplomas.

General Guidelines

1. All courses taken to fulfill the minor requirements below must be taken for graded credit.
2. A minimum grade point average (GPA) of 2.0 is required for courses used to fulfill the minor requirements.
3. No more than one upper-division course may be used to simultaneously fulfill requirements for a student's major and minor programs.

At least one of the five upper-division courses below must be taken during the academic year (i.e., not all courses may be Summer Session courses).

No substitutions to the courses listed below will be permitted.

Students must complete all prerequisite requirements before enrolling in upper-division Nutritional Sciences and Toxicology courses.

Lower-division Prerequisites

CHEM 1A	General Chemistry	3
CHEM 3A	Chemical Structure and Reactivity	3
CHEM 3B	Chemical Structure and Reactivity	3
BIOLOGY 1A	General Biology Lecture	3

Minor Requirements

NUSCTX 10	Introduction to Human Nutrition	3
NUSCTX 103	Nutrient Function and Metabolism	3
NUSCTX 160	Metabolic Bases of Human Health and Diseases	4
Select two or more of the following:		
NUSCTX 104	Human Food Practices	
NUSCTX 108A	Introduction and Application of Food Science	
NUSCTX 110	Toxicology	
NUSCTX C114/ ESPM C148	Pesticide Chemistry and Toxicology	
NUSCTX 115	Principles of Drug Action	
NUSCTX 121	Computational Toxicology	
NUSCTX C159 & ESPM C159	Human Diet and Human Diet	
NUSCTX 161A	Medical Nutrition Therapy	
NUSCTX 166	Nutrition in the Community	
NUSCTX 190	Introduction to Research in Nutritional Sciences	
NUSCTX 193	Introduction to Research in Toxicology	
NUSCTX H196	Honors Research (only available for students in CNR)	
NUSCTX 199	Supervised Independent Study and Research	

For College Requirements, please refer to the College of Natural Resources (http://guide.berkeley.edu/archive/2014-15/undergraduate/colleges-schools/natural-resources/#collegerequirementstext) .

Mission

The Nutritional Science, Physiology and Metabolism Track undergraduate curriculum provides a strong foundation in the chemical, biological, and genomic sciences focusing on regulation of metabolism in mammals. Special emphasis is placed on the effects of nutrients, phytochemicals, and food-derived toxicants in health and disease. The faculty and curriculum foster intellectual development and critical thinking to prepare students as professionals and leaders in the health and bioscience fields.

Learning Goals of the Major

1. To provide preparation in critical thinking, problem solving, and analytical skills
2. To provide insight and in-depth information on the interaction of natural and man-made toxicants with people and their impact on human health and disease (Depth)
3. To provide strong academic preparation for successful contributions to research, education, industry and government, and/or participation in advanced studies in health and biosciences (Breadth)
4. To inspire students to advance the health and well-being of citizens (Value)

Nutritional Science

NUSCTX 10 Introduction to Human Nutrition 3 Units
This course provides an overview of digestion and metabolism of nutrients. Foods are discussed as a source of nutrients, and the evidence is reviewed as to the effects of nutrition on health. The emphasis of the course is on issues of current interest and on worldwide problems of food and nutrition. Students are required to record their own diet, calculate its composition, and evaluate its nutrient content in light of their particular needs.
Rules & Requirements

Credit Restrictions: Students will receive no credit for 10 after taking 103 or 160.

Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture and 1 hour of discussion per week

Summer:
6 weeks - 6 hours of lecture and 1.5 hours of discussion per week
8 weeks - 4 hours of lecture and 2 hours of discussion per week

Additional Details

Subject/Course Level: Nutritional Sciences and Toxicology/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Formerly known as: Nutritional Sciences 10

NUSCTX 11 Introduction to Toxicology 3 Units
Discussion of principles for the evaluation of toxic hazard of natural and man-made substances present in the environment, the workplace, food, drink, and drugs. The bases for species selectivity, individual variations in sensitivity and resistance, and the combined effects of toxic agents will be addressed. Issues related to the impact of toxic agents in modern society will be emphasized.
Rules & Requirements

Prerequisites: Open to students pursuing science and non science majors

Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture and 1 hour of discussion per week

Additional Details

Subject/Course Level: Nutritional Sciences and Toxicology/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructors: Vulpe, Nomura, Wang

NUSCTX 24 Freshman Seminar 1 Unit
The Freshman Seminar Program has been designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a small-seminar setting. Freshman seminars are offered in all campus departments, and topics vary from department to department and semester to semester.
Rules & Requirements

Repeat rules: Course may be repeated for credit as topic varies. Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 1 hour of seminar per week

Additional Details

Subject/Course Level: Nutritional Sciences and Toxicology/ Undergraduate

Grading/Final exam status: The grading option will be decided by the instructor when the class is offered. Final exam required.

Instructor: Chang

Formerly known as: Nutritional Sciences 24

NUSCTX 98 Directed Group Study 1 - 3 Units
Study of special topics in nutritional sciences that are not covered in depth in regular courses.
Rules & Requirements

Prerequisites: Lower division standing and consent of instructor

Repeat rules: Course may be repeated for credit. Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 1-3 hours of directed group study per week

Summer:
6 weeks - 3-8 hours of directed group study per week
8 weeks - 2-6 hours of directed group study per week

Additional Details

Subject/Course Level: Nutritional Sciences and Toxicology/ Undergraduate

Grading/Final exam status: Offered for pass/not pass grade only. Final exam not required.

Formerly known as: Nutritional Sciences 98

NUSCTX 103 Nutrient Function and Metabolism 3 Units
Delivery of nutrients from foods to mammalian cells; major metabolic pathways; function of nutrients in energy metabolism, nitrogen and lipid metabolism, structural tissues and regulation; essentiality, activation, storage, excretion, and toxicity of nutrients.
Rules & Requirements

Prerequisites: 10, Molecular and Cell Biology 32, and Molecular and Cell Biology 102 (may be taken concurrently), or consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Nutritional Sciences and Toxicology/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructors: Sul, Chen

NUSCTX 104 Human Food Practices 2 Units
Historical, geo-ecological, biological, cultural, socio-economic, political and personal determinants of human diets. Community food and nutrition problems and programs. Food safety and consumer protection. Contributes to the pursuit of multidisciplinary degrees in nutrition policy and planning.
Rules & Requirements

Prerequisites: 10 recommended

Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture per week

Summer: 6 weeks - 5 hours of lecture per week

Additional Details

Subject/Course Level: Nutritional Sciences and Toxicology/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

NUSCTX 108A Introduction and Application of Food Science 3 Units
Evaluation of the chemical, physical, functional, and nutritional properities of foods. Emphasis on how these properties, and prepration, processing, and storage, influence quality characteristics of food products.
Rules & Requirements

Prerequisites: Molecular and Cell Biology 102 (may be taken concurrently), or consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Nutritional Sciences and Toxicology/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Rasmussen

NUSCTX 108B Application of Food Science Laboratory 1 Unit
Experimental evaluation of the chemical, physical, functional, and nutritional properties of foods, and the changes occuring during preparation that affect quality characteristics of food products.
Rules & Requirements

Prerequisites: 108A or concurrent enrollment

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of laboratory per week

Additional Details

Subject/Course Level: Nutritional Sciences and Toxicology/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Rasmussen

NUSCTX 110 Toxicology 4 Units
A comprehensive survey of the principles of modern toxicology and their applications in evaluating the safety of foods, additives and environmental contaminates. Mechanisms of metabolic activation, detoxification, gene regulation, and selective toxicity are emphasized.
Rules & Requirements

Prerequisites: Molecular and Cell Biology 102 (may be taken concurrently), or consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 1 hour of discussion per week

Additional Details

Subject/Course Level: Nutritional Sciences and Toxicology/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructors: Wang, Nomura

NUSCTX C114 Pesticide Chemistry and Toxicology 3 Units
Chemical composition of pesticides and related compounds, their mode of action, resistance mechanisms, and methods of evaluating their safety and activity.
Rules & Requirements

Prerequisites: Introductory courses in organic chemistry and biology, or consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Nutritional Sciences and Toxicology/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Casida

Also listed as: ESPM C148

NUSCTX 115 Principles of Drug Action 2 Units
Basic principles and quantitative aspects of drug action and risk/benefit as applied to the discovery, design, and development of human therapeutics. The course will highlight the importance of integrating pharmacology, toxicology, and pharmacokinetics to create effective and safe treatments for human disease. Special emphasis will be placed on pharmacogenomics and variation in individual response.
Rules & Requirements

Prerequisites: 110, 120 (may be taken concurrently), and Molecular and Cell Biology 102

Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture per week

Additional Details

Subject/Course Level: Nutritional Sciences and Toxicology/Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Johnson

NUSCTX 121 Computational Toxicology 3 Units
Introducing the use of bioinformatics tools useful in linking the molecular structure of chemicals to the toxicity they induce in biological systems. Discussions on the highly interactive process of collecting, organizing, and assimilating chemistry and toxicology information - and the use of computer programs to visualize, browse, and interpret this information to discover chemical structure-toxicity correlations. The importance of these concepts in drug discovery and development and food safety will be emphasized.
Rules & Requirements

Prerequisites: 110, 120 (may be taken concurrently)

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Nutritional Sciences and Toxicology/Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Johnson

Formerly known as: Nutritional Sciences 121

NUSCTX 135 Food Systems Organization and Management 4 Units
Principles of organization and management applied to institutional food service systems: production and delivery systems, management of resources, quality assurance, equipment, layout, marketing, personnel management, fiscal management. Laboratory experiences, projects and field work in institutional situations.
Rules & Requirements

Prerequisites: Consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 3 hours of fieldwork per week

Additional Details

Subject/Course Level: Nutritional Sciences and Toxicology/Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Rasmussen

NUSCTX 145 Nutrition Education and Counseling 2 Units
This course will focus on communicating nutrition messages through nutrition education and nutrition counseling. Students will develop and implement theory-based nutrition education interventions and conduct mock counseling sessions for various populations and conditions. Strategies for effective nutrition instruction, counseling, and behavior change will be discussed.
Rules & Requirements

Prerequisites: 161A and 161B or concurrent enrollment in these courses. Dietetic majors only

Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture per week

Additional Details

Subject/Course Level: Nutritional Sciences and Toxicology/Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: McCoin

NUSCTX C159 Human Diet 4 Units
Since we eat every day, wouldn't it be useful to learn more about human dietary practices? A broad overview of the complex interrelationship between humans and their foods. Topics include the human dietary niche, biological variation related to diet, diet and disease, domestication of staple crops, food processing techniques and development of regional cuisines, modern diets and their problems, food taboos, human attitudes toward foods, and dietary politics.
Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 1 hour of discussion per week

Additional Details

Subject/Course Level: Nutritional Sciences and Toxicology/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Milton

Also listed as: ESPM C159

NUSCTX 160 Metabolic Bases of Human Health and Diseases 4 Units
The physiological bases of human nutrient homeostasis and common disorders resulting from over and under nutrition will be discussed with a specific focus on macronutrients. Topics related to nutrient deficiency and excess will include adaptation to starvation and the effects of caloric restriction on life-span, obesity and its complications, lipoprotein metabolism and cardiovascular disease, as well as a detailed discussion of the causes, disease mechanisms, and treatment of diabetes mellitus.
Rules & Requirements

Prerequisites: 103, or Molecular and Cell Biology 102 or equivalent

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 1 hour of discussion per week

Additional Details

Subject/Course Level: Nutritional Sciences and Toxicology/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructors: Stahl, Napoli

NUSCTX 161A Medical Nutrition Therapy 4 Units
This lecture course addresses nutrition as a component of disease treatment. As we explore medical nutrition therapy, we will also study disease pathophysiology, diagnosis, and medical and pharmacological treatments. Methods of nutrition assessment and nutrient delivery in a medical setting will be covered.
Rules & Requirements

Prerequisites: 103 and 160

Hours & Format

Fall and/or spring: 15 weeks - 4 hours of lecture per week

Additional Details

Subject/Course Level: Nutritional Sciences and Toxicology/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: McCoin

NUSCTX 161B Medical Nutrition Therapy II 4 Units
This is the second course of a two part series that is a continuation of addressing nutrition as a component of disease treatment. The Nutrition Care Process will be applied and disease pathophysiology, diagnosis, medical and pharmacological treatments and nutritional therapies for prevention and treatment will be explored for various disease states.
Rules & Requirements

Prerequisites: Nutritional Science and Toxicology 103, 160, and 161A, or consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 4 hours of lecture per week

Additional Details

Subject/Course Level: Nutritional Sciences and Toxicology/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

NUSCTX 166 Nutrition in the Community 3 Units
This course addresses basic nutrition in the context of the community. It explores nutrition programs that serve various segments of the population and the relationships of these programs to nutrition policy at the local, national, and international levels. Community assessment is used as the basis for program planning, implementation, and evaluation. The specific needs of population groups (infants, children, women, and the elderly) are considered and questions of food security are investigated.
Rules & Requirements

Prerequisites: 10 recommended; upper division standing required

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Nutritional Sciences and Toxicology/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Henderson

NUSCTX 170 Experimental Nutrition Laboratory 4 Units
Basic principles and techniques used in human and animal nutrition research. Students design, execute, and analyze experiments.
Rules & Requirements

Prerequisites: Nutritional Sciences and Toxicology 103 and a course in statistics

Credit Restrictions: Students will receive no credit for Nutritional Sciences and Toxicology 170 after taking Nutritional Science and Toxicology 171 or Nutritional Sciences 171. A deficient grade in Nutritional Sciences 170 may be removed by taking Nutritional Sciences and Toxicology 170.

Hours & Format

Fall and/or spring: 15 weeks - 8 hours of laboratory per week

Additional Details

Subject/Course Level: Nutritional Sciences and Toxicology/ Undergraduate

Grading/Final exam status: Letter grade. Final exam not required.

Instructor: Leitman

NUSCTX 171 Nutrition and Toxicology Laboratory 4 Units
Basic principles and techniques used in human and animal nutrition and toxicology research. Students design, execute, and analyze experiments.
Rules & Requirements

Prerequisites: Nutritional Sciences and Toxicology 110, Molecular and Cell Biology 104 or 142 (may be taken concurrently) or Integrative Biology 141

Credit Restrictions: Students will receive no credit for Nutritional Sciences and Toxicology 171 after taking Nutritional Sciences and Toxicology 170 or Nutritional Sciences 170. A deficient grade in Nutritional Sciences 171 may be removed by taking Nutritional Sciences and Toxicology 171.

Hours & Format

Fall and/or spring: 15 weeks - 8 hours of laboratory per week

Additional Details

Subject/Course Level: Nutritional Sciences and Toxicology/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Leitman

NUSCTX 190 Introduction to Research in Nutritional Sciences 1 Unit
Students will be asked to prepare an oral and written report on a topic selected from the current research literature in nutritional sciences.
Rules & Requirements

Prerequisites: 103

Hours & Format

Fall and/or spring: 15 weeks - 1 hour of lecture per week

Additional Details

Subject/Course Level: Nutritional Sciences and Toxicology/ Undergraduate

Grading/Final exam status: Letter grade. Final exam not required.

Formerly known as: Nutritional Sciences 190

NUSCTX 192 Junior Seminar in Dietetics 1 Unit
This seminar course explores the professional roles and responsibilities of dietitians as well as career opportunities within the field. Current issues in the practice of dietetics will be discussed. Students will do research and present an oral report to the class. Each student will begin to develop his or her professional portfolio.
Rules & Requirements

Prerequisites: Upper division standing and consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 1 hour of lecture per week

Additional Details

Subject/Course Level: Nutritional Sciences and Toxicology/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

NUSCTX 193 Introduction to Research in Toxicology 1 Unit
Students will be asked to prepare an oral and written report on a topic selected from the current research literature in toxicology.
Rules & Requirements

Prerequisites: 110 or consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 1 hour of seminar per week

Additional Details

Subject/Course Level: Nutritional Sciences and Toxicology/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Kubo

Formerly known as: Nutritional Sciences 193

NUSCTX 194 Senior Seminar in Dietetics 2 Units
This course will cover the changes that are occurring in the field of dietetics. Students will explore revisions of the national nutritional standards and guidelines, issues related to complementary and alternative nutrition practices, the area of genomics as it is expected to affect practice, professional ethics in the changing health care environment, reimbursement for professional services, legislation related to the field of dietetics, and other emerging issues.
Rules & Requirements

Prerequisites: Upper division standing and consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 1 hour of lecture and 1 hour of discussion per week

Additional Details

Subject/Course Level: Nutritional Sciences and Toxicology/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

NUSCTX H196 Honors Research 4 Units
Supervised independent honors research specific to aspects of the Nutritional Science and Toxicology major, followed by an oral presentation, and a written report.
Rules & Requirements

Prerequisites: Upper division standing and minimum GPA. See CNR Honors website for current minimum GPA. http://nature.berkeley.edu/site/honors_program.php

Repeat rules: Course may be repeated for credit. Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 12 hours of independent study per week

Additional Details

Subject/Course Level: Nutritional Sciences and Toxicology/ Undergraduate

Grading/Final exam status: Letter grade. Final exam not required.

Formerly known as: Nutritional Sciences H196

NUSCTX 197 Field Study in Food and Nutritional Sciences 1 - 3 Units
Supervised experience in off-campus organizations relevant to specific aspects of foods and nutritional sciences. Regular individual meetings with faculty sponsor and written reports required.
Rules & Requirements

Repeat rules: Course may be repeated for credit. Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 0 hours of fieldwork per week

Summer:
6 weeks - 1-5 hours of fieldwork per week
8 weeks - 1-4 hours of fieldwork per week

Additional Details

Subject/Course Level: Nutritional Sciences and Toxicology/ Undergraduate

Grading/Final exam status: Offered for pass/not pass grade only. Final exam not required.

Formerly known as: Nutritional Sciences 197

NUSCTX 198 Directed Group Study 1 - 3 Units
Study of special topics in food science or nutrition that are not covered in depth in regular courses.
Rules & Requirements

Prerequisites: Consent of instructor

Repeat rules: Course may be repeated for credit. Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 1-3 hours of directed group study per week

Additional Details

Subject/Course Level: Nutritional Sciences and Toxicology/ Undergraduate

Grading/Final exam status: Offered for pass/not pass grade only. Final exam not required.

Formerly known as: Nutritional Sciences 198

NUSCTX 199 Supervised Independent Study and Research 1 - 4 Units
Upper division laboratory and independent research under the direction of a faculty supervisor. Written report required upon completion of the project.
Rules & Requirements

Prerequisites: Upper division standing and consent of instructor

Repeat rules: Course may be repeated for credit. Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 0 hours of independent study per week

Summer:
6 weeks - 1-3 hours of independent study per week
8 weeks - 1-3 hours of independent study per week

Additional Details

Subject/Course Level: Nutritional Sciences and Toxicology/ Undergraduate

Grading/Final exam status: Offered for pass/not pass grade only. Final exam not required.

Formerly known as: Nutritional Sciences 199