

# Nutritional Sciences: Toxicology

## Bachelor of Science (BS)

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

Now is an exciting time to explore the sciences of nutrition and toxicology. The media have highlighted many questions about the role of diet in development and aging, the safety of genetically modified foods, links among diet, cancer, and chronic diseases, and the problems of global malnutrition.

The curriculum, driven by NST faculty research, covers a breadth of topics including functions and mechanisms of nutrient actions to the benefits and hazards of chemical agents, cultural and socio-economic determinants of human diets, and development of programs and policies to address human and environmental health and safety.

## Overview of Specialization

The Nutritional Science: Toxicology degree combines a strong foundation in biological and chemical sciences with specialized advanced courses focusing on hazardous and beneficial effects of natural and human-made toxic agents. From industrially produced environmental contaminants and designer drugs to 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

Advice on admission for freshmen and transfer students can be found on the CNR Admissions Guide (<http://guide.berkeley.edu/archive/2018-19/undergraduate/colleges-schools/natural-resources/#admissionstext>) page or the CNR Prospective Student website (<https://nature.berkeley.edu/prospective-students>). 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. Transfer students may apply directly to the major and indicate their intended specialization through the UC application.

Information for current Berkeley students who would like to declare the major after admission, including information on a change of major or change of college, please see chapter 6 of the College of Natural Resources Undergraduate Student Handbook (<https://nature.berkeley.edu/handbook>).

## Honors Program

Students who are interested in the honors program 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 Molecular Toxicology. The course work for the minor addresses topics in the basic principles of toxicology and molecular toxicology as well as computational toxicology, pharmacology, and pesticide chemistry. The minor is best suited for students already pursuing a bioscience degree: 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 CNR Office of Instruction and Student Affairs in 260 Mulford Hall.

## Other Minor Offered by the Department of Nutritional Sciences and Toxicology

Toxicology (<http://guide.berkeley.edu/archive/2018-19/undergraduate/degree-programs/toxicology>) (Minor only)

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.

All students must complete R1A & R1B (or equivalent Reading and Comprehension course) before the end of their Sophomore year.

NOTE: The curriculum has been revised effective Fall 2016. Students admitted prior to Fall 16 and following the previous curriculum should refer to the 2015-16 Guide (<http://guide.berkeley.edu/archive/2018-19/archive/2015-16/undergraduate/degree-programs/nutritional-science/#majorrequirementstext>).

**The College of Natural Resources (CNR) Undergraduate Handbook** (<https://nature.berkeley.edu/handbook>) serves as a guide to the academic policies and information that students need in order to be successful while completing their coursework at Berkeley:

## Toxicology Specialization

For Breadth, you are required to take 14 additional units of course work in American Cultures, Arts & Literature, Historical Studies, International Studies, Philosophy & Values, Social & Behavioral Sciences, or Foreign Language. Please refer to the L&S 7 course breadth categories here: <https://ls.berkeley.edu/seven-course-breadth-requirement>

## Lower Division Requirements

MATH 16A & MATH 16B & STAT 2	Analytic Geometry and Calculus and Analytic Geometry and Calculus and Introduction to Statistics	10
MATH 1A & MATH 1B & STAT 2	Calculus and Calculus and Introduction to Statistics	12
MATH 10A & MATH 10B	Methods of Mathematics: Calculus, Statistics, and Combinatorics and Methods of Mathematics: Calculus, Statistics, and Combinatorics	8
Complete all of the following:		
CHEM 1A & 1AL	General Chemistry and General Chemistry Laboratory	5
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 C103 or MCELLBI 136	Bacterial Pathogenesis Physiology	3
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 30 upper division units:

CIV ENG 114	Environmental Microbiology	3
CIV ENG 115	Water Chemistry	3
ESPM 100	Environmental Problem Solving	4
ESPM 119	Chemical Ecology	2
ESPM 162	Bioethics and Society	4
ESPM C180	Air Pollution	3
INTEGBI 117	Medical Ethnobotany	2
INTEGBI 131	General Human Anatomy	3
INTEGBI 152	Environmental Toxicology	4
NUSCTX C114/ESPM C148	Pesticide Chemistry and Toxicology	3
NUSCTX 160	Metabolic Bases of Human Health and Diseases	4
NUSCTX 115	Principles of Drug Action	2
NUSCTX H196	Honors Research	4
NUSCTX 199	Supervised Independent Study and Research	1-4
PB HLTH 150A	Introduction to Epidemiology and Human Disease	4
PB HLTH 150B	Introduction to Environmental Health Sciences	3
UGIS 192C	Supervised Research: Biological Sciences	1-4

Other CHEM, INTEGBI, MCELLBI, & PLANTBI lecture or lab courses also accepted

Students who wish to minor would complete a minor in Nutritional Sciences or Molecular Toxicology. The requirements below are for the Molecular Toxicology minor. 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 2.5 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 11	Introduction to Toxicology	3
NUSCTX 110	Toxicology	4
NUSCTX 121	Computational Toxicology	3

Select at least two electives from the following:

NUSCTX 103	Nutrient Function and Metabolism	3
NUSCTX 104	Food, Culture, and the Environment	2
NUSCTX 108A	Introduction and Application of Food Science	3
NUSCTX 115	Principles of Drug Action	2
NUSCTX C159	Human Diet	4
NUSCTX 160	Metabolic Bases of Human Health and Diseases	4
NUSCTX 161A	Medical Nutrition Therapy	4
NUSCTX 166	Nutrition in the Community	3
NUSCTX 190	Introduction to Research in Nutritional Sciences	1
NUSCTX 193	Introduction to Research in Toxicology	1
NUSCTX H196	Honors Research	4
NUSCTX 199	Supervised Independent Study and Research	1-4

## 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 30 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)(NST-Dietetics has 43 upper division requirements).
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 full details around all requirements, please see our Student Handbook (<https://nature.berkeley.edu/handbook>):

Reading and Composition (<http://guide.berkeley.edu/archive/2018-19/undergraduate/colleges-schools/natural-resources/reading-composition-requirement>)

In order to provide a solid foundation in reading, writing and critical thinking all majors in the College require two semesters of lower division work in composition. Students must complete a first-level reading and composition course by the end of their second semester and a second-level course by the end of their fourth semester.

Foreign Language (<http://guide.berkeley.edu/archive/2018-19/undergraduate/colleges-schools/natural-resources/foreign-language-requirement>): EEP Majors only

The Foreign Language requirement is only required by Environmental Economics and Policy (EEP) majors. It may be satisfied by demonstrating proficiency in reading comprehension, writing, and conversation in a foreign language equivalent to the second semester college level, either by passing an exam or by completing approved course work.

Quantitative Reasoning (<http://guide.berkeley.edu/archive/2018-19/undergraduate/colleges-schools/natural-resources/quantitative-reasoning-requirement>): EEP Majors only

The Quantitative Reasoning requirement is only required by Environmental Economics and Policy (EEP) majors. The requirement may be satisfied by exam or by taking an approved course.

## Undergraduate Breadth

Undergraduate breadth provide Berkeley students with a rich and varied educational experience outside of their major program and many students complete their breadth courses in their first two years. Breadth courses are built into CNR major requirements and each major requires a different number of breadth courses and categories. The EEP major is the only CNR major that requires the entire 7 course breadth. Refer to the major snapshots on each CNR major page (<https://nature.berkeley.edu/advising/majors-minors>) for additional information.

## High School Exam Credit

CNR students may apply high school exam credit (Advanced Placement, International Baccalaureate, A-Level Exam) towards many College and Major Requirements. See AP Exam Equivalency Chart and Higher Level IB Exam Equivalency Chart (<https://nature.berkeley.edu/advising/courses-grades/#AP%20Exam%20Equivalency%20Chat>) in the CNR Student Handbook (<https://nature.berkeley.edu/handbook>) for more information.

## Units Requirements

- Students must complete at least 120 semester units of courses subject to certain guidelines:
- At least 36 units must be upper division courses, including a minimum of 15 units of upper division courses in the College of Natural Resources.
- A maximum of 16 units of Special Studies coursework (courses numbered 97, 98, 99, 197, 198, or 199) is allowed towards the 120 units; a maximum of four is allowed in a given semester.
- A maximum of 4 units of Physical Education from any school attended will count towards the 120 units.

- Students may receive unit credit for courses graded P (including P/ NP units taken through EAP) up to a limit of one-third of the total units taken and passed on the Berkeley campus at the time of graduation.

## Semester Unit Minimum

All CNR students must enroll in at least 13 units each fall and spring semester

## Semester Unit Maximum

To request permission to take more than 19.5 units in a semester, please see the major adviser.

## Semester Limit

Students admitted as freshmen must graduate within 8 fall/spring semesters at UC Berkeley. Students admitted as transfer students must graduate within 4 fall/spring semesters at UC Berkeley. Students who go on EAP and UCDC can petition for additional semesters. Summer session, UC Extension and non-UC study abroad programs do not count towards this semester limit. Students approved for double majors or simultaneous degrees in two colleges may be granted an additional semester. CNR does not limit the number of total units a student can accrue.

## Senior Residence Requirement

After the term in which you achieve and exceed 90 units (senior status), you must complete at least 24 of the remaining 30 units in residence at the College of Natural Resources over at least 2 semesters. To count as residence, a semester must consist of at least 6 passed units taken while the student is a member of CNR. At least one of the two terms must be a fall or spring semester. Senior residence terms do not need to be completed consecutively. All courses offered on campus for the fall, spring, and summer terms by Berkeley departments and programs and all Berkeley online ('W') courses count. Inter-campus Visitor, Education Abroad Program, UC Berkeley Washington Program, and UC Berkeley Extension units do not count toward this requirement.

Students may use Summer Session to satisfy one semester of the Senior Residence Requirement, provided that four units of coursework are completed.

## Modified Senior Residence Requirement

Participants in a fall, spring or summer UC Education Abroad Program (UCEAP), Berkeley Summer Abroad, or the UC Berkeley Washington Program may meet a modified Senior Residence Requirement by completing 24 of their final 60 semester units in residence (excluding UCEAP). At least 12 of these 24 units must be completed after senior status is reached. International travel study programs sponsored by Summer Sessions and education abroad programs offered outside of the UC system do not qualify for modified senior residence.

Most students automatically satisfy the residence requirement by attending classes here for four years. In general, there is no need to be concerned about this requirement, unless students go abroad for a semester or year or want to take courses at another institution or through University Extension during their senior year. In these cases, students should make an appointment to see an adviser to determine how they can meet the Senior Residence Requirement.

## Grade Requirements

- A 2.0 UC GPA is required for graduation.

- A 2.0 average in all upper division courses required of the major program is required for graduation.
- A grade of at least C- is required in all courses for the major.

## Learning Goals

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).

In the College of Natural Resources, we provide holistic, individual advising services to prospective and current students who are pursuing major and minors in our college. We assist with a range of topics including course selection, academic decision-making, achieving personal and academic goals, and maximizing the Berkeley experience.

If you are looking to explore your options, or you are ready to declare a major, double major, or minor, contact the undergraduate adviser for your intended major. Visit our website (<https://nature.berkeley.edu/advising/meet-cnr-advisors>) to explore all of our advising services.

### Undergraduate Adviser, Nutritional Sciences and Toxicology

260 Mulford Hall

510-642-0542

[cnrteaching@berkeley.edu](mailto:cnrteaching@berkeley.edu)

Expand all course descriptions [+] Collapse all course descriptions [-]

## NUSCTX 10 Introduction to Human Nutrition 3 Units

Terms offered: Summer 2020 First 6 Week Session, Summer 2020 Second 6 Week Session, Spring 2020

This course focuses on relationships between diet and health, and responses of the human body to diet and food components, including macro and micro nutrients, water, phytochemicals, and alcohol. This course also provides an overview of the interplay between nutrients and physiological and behavioral responses. Lectures, which address contributions of diet to optimal health or disease risk, are based on current nutritional, biochemical, and medical knowledge. Goals include enabling students to make informed decisions about their nutritional needs and current issues concerning nutrition.

Introduction to Human Nutrition: Read More [+]

### 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.

Introduction to Human Nutrition: Read Less [-]

## NUSCTX 11 Introduction to Toxicology 3 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018

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.

Introduction to Toxicology: Read More [+]

### 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

Introduction to Toxicology: Read Less [-]

## NUSCTX 20 Personal Food Security and Wellness 2 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

Food insecurity is broadly defined as having unreliable access to adequate foods resulting in disrupted eating patterns or reduced food intake due to a lack of money and other resources for food. NST 20 will improve nutrition-related behaviors and support students in need of improving their food security status. Students whom have limited cooking and food preparation experience will acquire foundational nutrition knowledge and basic cooking skills to be able to prepare healthful and affordable meals in consideration of existing factors, such as: food availability; food budgeting; and time management.

Personal Food Security and Wellness: Read More [+]

### Hours & Format

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

### Additional Details

**Subject/Course Level:** Nutritional Sciences and Toxicology/  
Undergraduate

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

Personal Food Security and Wellness: Read Less [-]

## NUSCTX 24 Freshman Seminar 1 Unit

Terms offered: Fall 2019, Fall 2018, Spring 2018

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.

Freshman Seminar: Read More [+]

### Rules & Requirements

**Repeat rules:** 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 To be decided by the instructor when the class is offered.

**Instructor:** Chang

**Formerly known as:** Nutritional Sciences 24

Freshman Seminar: Read Less [-]

## NUSCTX 30 Sports Nutrition 3 Units

Terms offered: Summer 2020 Second 6 Week Session

A survey course of nutrition with an emphasis on the relationships among diet, physical activity, and health; exploration of the changes in the metabolism of carbohydrates, lipids, protein and water; discussion of the function of vitamins and minerals; practical application of evidence-based dietary recommendations for common sports and varying physical intensities.

Sports Nutrition: Read More [+]

### Rules & Requirements

**Prerequisites:** None

### Hours & Format

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

### Summer:

6 weeks - 9 hours of lecture per week

8 weeks - 6 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:** Deegan

Sports Nutrition: Read Less [-]



## NUSCTX 98 Directed Group Study 1 - 3 Units

Terms offered: Spring 2020, Spring 2019, Fall 2016

Study of special topics in nutritional sciences that are not covered in depth in regular courses.

Directed Group Study: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Lower division standing and consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### 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

Directed Group Study: Read Less [\[-\]](#)

## NUSCTX 103 Nutrient Function and Metabolism 3 Units

Terms offered: Fall 2019, Fall 2018, Fall 2017

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.

Nutrient Function and Metabolism: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Required: Bio 1A, Recommended: MCB 32 and 102

### 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:** Sul, Olzmann

Nutrient Function and Metabolism: Read Less [\[-\]](#)

## NUSCTX 104 Food, Culture, and the Environment 2 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018

This nutrition course with an anthropological perspective examines why we eat what we eat by addressing environmental, socio-economic, political, cultural, and personal components of the human diet. Cuisines from a sampling of countries and regions are discussed.

Food, Culture, and the Environment: Read More [\[+\]](#)

### 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.

Food, Culture, and the Environment: Read Less [\[-\]](#)

## NUSCTX 104AC Human Food Practices AC 3 Units

Terms offered: Not yet offered

This course will broadly address the historical, ecological, socioeconomic, biological, political, cultural, and personal components of the human diet in addition to nutrition problems, programs, and consumer protection. It is a nutrition course with an anthropological slant that examines why we eat what we eat and contributes to the pursuit of multidisciplinary degrees in nutrition policy and planning. As an American Cultures course, we will also discuss cuisines from a variety of different countries and regions, with a specific focus on those in America, and examine how race and ethnicity affect diet, food access, and relationship with food. Introduction to Human Nutrition (NST10) is recommended as a prerequisite.

Human Food Practices AC: Read More [ + ]

### Rules & Requirements

**Prerequisites:** Nutritional Sciences and Toxicology 10 (Recommended)

**Requirements this course satisfies:** Satisfies the American Cultures requirement

### Hours & Format

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

**Summer:** 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.

**Instructor:** Rasmussen

Human Food Practices AC: Read Less [ - ]

## NUSCTX W104 Food, Culture, and the Environment AC 3 Units

Terms offered: Summer 2020 8 Week Session, Summer 2019 8 Week Session, Summer 2018 8 Week Session

This course will broadly address the historical, ecological, socioeconomic, biological, political, and cultural environments impacting the human diet in addition to nutrition problems, programs, and consumer protection. It is a nutrition course with an anthropological slant that examines why we eat what we eat and contributes to the pursuit of multidisciplinary degrees in nutrition policy and planning. As an American Cultures course, we will discuss cuisines from a variety of different countries and regions, with a specific focus on those in America, and examine how race and ethnicity affect diet, food access, and the human relationship with food.

Food, Culture, and the Environment AC: Read More [ + ]

### Rules & Requirements

**Prerequisites:** Nutritional Sciences and Toxicology 10 (Recommended)

**Requirements this course satisfies:** Satisfies the American Cultures requirement

### Hours & Format

**Summer:** 8 weeks - 4 hours of web-based lecture per week

**Online:** This is an online course.

### Additional Details

**Subject/Course Level:** Nutritional Sciences and Toxicology/ Undergraduate

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

**Instructor:** Rasmussen

Food, Culture, and the Environment AC: Read Less [ - ]

## NUSCTX 108A Introduction and Application of Food Science 3 Units

Terms offered: Fall 2019, Fall 2018, Fall 2017

Evaluation of the chemical, physical, functional, and nutritional properties of foods. Emphasis on how these properties, and preparation, processing, and storage, influence quality characteristics of food products. Introduction and Application of Food Science: Read More [ + ]

### 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

Introduction and Application of Food Science: Read Less [ - ]

## NUSCTX 108B Application of Food Science Laboratory 1 Unit

Terms offered: Fall 2019, Fall 2018, Fall 2017

Experimental evaluation of the chemical, physical, functional, and nutritional properties of foods, and the changes occurring during preparation that affect quality characteristics of food products.

Application of Food Science Laboratory: Read More [\[+\]](#)

### 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

Application of Food Science Laboratory: Read Less [\[-\]](#)

## NUSCTX 110 Toxicology 4 Units

Terms offered: Fall 2019, Fall 2018, Fall 2017

A comprehensive survey of the principles of modern toxicology and their applications in evaluating the safety of foods, additives and environmental contaminants. Mechanisms of metabolic activation, detoxification, gene regulation, and selective toxicity are emphasized.

Toxicology: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** BIOLOGY 1A, 1AL, and Chemistry 3B (or equivalent courses)

### 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

Toxicology: Read Less [\[-\]](#)

## NUSCTX C114 Pesticide Chemistry and Toxicology 3 Units

Terms offered: Spring 2018, Spring 2017, Spring 2016

Chemical composition of pesticides and related compounds, their mode of action, resistance mechanisms, and methods of evaluating their safety and activity.

Pesticide Chemistry and Toxicology: Read More [\[+\]](#)

### 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 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:** Casida

**Also listed as:** ESPM C148

Pesticide Chemistry and Toxicology: Read Less [\[-\]](#)

## NUSCTX 115 Principles of Drug Action 2 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018

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.

Principles of Drug Action: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** 110, 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

Principles of Drug Action: Read Less [\[-\]](#)



## NUSCTX 121 Computational Toxicology 3 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018

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.

Computational Toxicology: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** BIOLOGY 1A, 1AL, and Chemistry 3B (or equivalent courses). NST 110 also recommended

### 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:** Johnson

Computational Toxicology: Read Less [\[-\]](#)

## NUSCTX 135 Food Systems Organization and Management 4 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018

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.

Food Systems Organization and Management: Read More [\[+\]](#)

### 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

Food Systems Organization and Management: Read Less [\[-\]](#)

## NUSCTX 145 Nutrition Education and Counseling 2 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018

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.

Nutrition Education and Counseling: Read More [\[+\]](#)

### 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:** McCain

Nutrition Education and Counseling: Read Less [\[-\]](#)

## NUSCTX C159 Human Diet 4 Units

Terms offered: Spring 2016, Spring 2015, Spring 2013

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.

Human Diet: Read More [\[+\]](#)

### 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

Human Diet: Read Less [\[-\]](#)

## NUSCTX 160 Metabolic Bases of Human Health and Diseases 4 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018

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. Metabolic Bases of Human Health and Diseases: Read More [+]

### Rules & Requirements

**Prerequisites:** Required: Bio 1A, Recommended: MCB 102 or 103

### 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

Metabolic Bases of Human Health and Diseases: Read Less [-]

## NUSCTX 161A Medical Nutrition Therapy 4 Units

Terms offered: Fall 2019, Fall 2018, Fall 2017

This fall course serves as the first of a two part series that addresses the nutritional component of treating disease. The Nutrition Care Process of the Academy of Nutrition and Dietetics provides the framework for nutritional status assessment, diagnosis, nutrition intervention, and evaluation. Disease pathophysiology, diagnosis, medical and pharmacological treatments, and nutritional therapies for prevention and treatment are explored for conditions common throughout the lifecycle. The first part focuses on cardiovascular disease. Additional diseases are addressed in 161B in the spring semester. This course will provide an opportunity to apply knowledge of MNT through case studies and various activities.

Medical Nutrition Therapy: Read More [+]

### 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:** McCain

Medical Nutrition Therapy: Read Less [-]

## NUSCTX 161B Medical Nutrition Therapy II 4 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018

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.

Medical Nutrition Therapy II: Read More [+]

### 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.

Medical Nutrition Therapy II: Read Less [-]

## NUSCTX 166 Nutrition in the Community 3 Units

Terms offered: Fall 2019, Fall 2018, Fall 2017

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.

Nutrition in the Community: Read More [+]

### 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

Nutrition in the Community: Read Less [-]

## NUSCTX 170 Experimental Nutrition Laboratory 4 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018

Basic principles and techniques used in human and animal nutrition research. Students design, execute, and analyze experiments.

Experimental Nutrition Laboratory: [Read More](#) [+]

### 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

Experimental Nutrition Laboratory: [Read Less](#) [-]

## NUSCTX 171 Nutrition and Toxicology Laboratory 4 Units

Terms offered: Fall 2019, Fall 2018, Fall 2017

Basic principles and techniques used in human and animal nutrition and toxicology research. Students design, execute, and analyze experiments. Nutrition and Toxicology Laboratory: [Read More](#) [+]

### Rules & Requirements

**Prerequisites:** Nutritional Sciences and Toxicology 110

**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

Nutrition and Toxicology Laboratory: [Read Less](#) [-]

## NUSCTX 190 Introduction to Research in Nutritional Sciences 1 Unit

Terms offered: Spring 2020, Fall 2019, Spring 2019

Students will be asked to prepare an oral and written report on a topic selected from the current research literature in nutritional sciences.

Introduction to Research in Nutritional Sciences: [Read More](#) [+]

### 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

Introduction to Research in Nutritional Sciences: [Read Less](#) [-]

## NUSCTX 192 Junior Seminar in Dietetics 1 Unit

Terms offered: Fall 2019, Fall 2018, Fall 2017

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.

Junior Seminar in Dietetics: [Read More](#) [+]

### 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.

Junior Seminar in Dietetics: [Read Less](#) [-]

## NUSCTX 193 Introduction to Research in Toxicology 1 Unit

Terms offered: Spring 2020, Spring 2019, Spring 2018

Students will be asked to prepare an oral and written report on a topic selected from the current research literature in toxicology.

Introduction to Research in Toxicology: Read More [+]

### 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

Introduction to Research in Toxicology: Read Less [-]

## NUSCTX 194 Senior Seminar in Dietetics 2 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018

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.

Senior Seminar in Dietetics: Read More [+]

### 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.

Senior Seminar in Dietetics: Read Less [-]

## NUSCTX H196 Honors Research 4 Units

Terms offered: Spring 2018, Fall 2016, Spring 2016

Supervised independent honors research specific to aspects of the Nutritional Science and Toxicology major, followed by an oral presentation, and a written report.

Honors Research: Read More [+]

### 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](http://nature.berkeley.edu/site/honors_program.php)

**Repeat rules:** Course may be repeated for credit without restriction.

### 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

Honors Research: Read Less [-]

## NUSCTX 197 Field Study in Food and Nutritional Sciences 1 - 3 Units

Terms offered: Fall 2016, Spring 2008, Spring 2007

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.

Field Study in Food and Nutritional Sciences: Read More [+]

### Rules & Requirements

**Repeat rules:** Course may be repeated for credit without restriction.

### 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

Field Study in Food and Nutritional Sciences: Read Less [-]

## NUSCTX 198 Directed Group Study 1 - 3 Units

Terms offered: Spring 2020, Fall 2019, Fall 2016

Study of special topics in food science or nutrition that are not covered in depth in regular courses.

Directed Group Study: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### 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

Directed Group Study: Read Less [\[-\]](#)

## NUSCTX 199 Supervised Independent Study and Research 1 - 4 Units

Terms offered: Fall 2017, Fall 2016, Spring 2016

Upper division laboratory and independent research under the direction of a faculty supervisor. Written report required upon completion of the project.

Supervised Independent Study and Research: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Upper division standing and consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### 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

Supervised Independent Study and Research: Read Less [\[-\]](#)

## NUSCTX 200 Advanced Organismal Nutrition and Metabolism 3 Units

Terms offered: Spring 2011, Spring 2010, Spring 2009

Critical analysis of concepts and research methods relating to nutritional metabolism and its regulation in intact organisms is studied. Areas covered include the basis of nutrient requirements and nutritional assessment, integration of metabolic pathways, research techniques, nutritional diseases, and specific topics such as calcium, vitamins, and trace elements.

Advanced Organismal Nutrition and Metabolism: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** 103, 160, and Molecular and Cell Biology 102 or equivalent

### Hours & Format

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

### Additional Details

**Subject/Course Level:** Nutritional Sciences and Toxicology/Graduate

**Grading:** Letter grade.

**Instructor:** Hellerstein

**Formerly known as:** Nutritional Sciences 200

Advanced Organismal Nutrition and Metabolism: Read Less [\[-\]](#)

## NUSCTX 211A Introduction to Research in Nutritional Sciences 4 - 8 Units

Terms offered: Fall 2019, Fall 2018, Fall 2017

Supervised experimental work under the direction of individual faculty members, which introduces experimental methods and research approaches in metabolic biology/nutritional biochemistry.

Introduction to Research in Nutritional Sciences: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Restricted to graduate students in the metabolic biology graduate program with the consent of the principal investigator

### Hours & Format

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

### Additional Details

**Subject/Course Level:** Nutritional Sciences and Toxicology/Graduate

**Grading:** Letter grade. This is part one of a year long series course. A provisional grade of IP (in progress) will be applied and later replaced with the final grade after completing part two of the series.

**Instructor:** Napoli

Introduction to Research in Nutritional Sciences: Read Less [\[-\]](#)



## NUSCTX 211B Introduction to Research in Nutritional Sciences 4 - 8 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018

Closely supervised experimental work under the direction of individual faculty members; an introduction to experimental methods and research approaches in areas of nutritional sciences.

Introduction to Research in Nutritional Sciences: [Read More](#) [+]

### Rules & Requirements

**Prerequisites:** Restricted to graduate students in the nutrition program; consent of instructor

### Hours & Format

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

### Additional Details

**Subject/Course Level:** Nutritional Sciences and Toxicology/Graduate

**Grading:** Letter grade. This is part two of a year long series course. Upon completion, the final grade will be applied to both parts of the series.

**Instructor:** Napoli

Introduction to Research in Nutritional Sciences: [Read Less](#) [-]

## NUSCTX 220 Molecular Toxicology 4 Units

Terms offered: Spring 2012, Spring 2011, Spring 2010

Molecular toxicology attempts to understand the mechanisms by which hazardous compounds cause their toxic effects. The course will focus on our understanding of the important tissue and cellular components involved in chemical exposure from entry to effect to exit. Topics include metabolism and mechanisms of toxins, toxicogenomics, toxin effects in individuals and groups, and tools to predict toxicology.

Molecular Toxicology: [Read More](#) [+]

### Rules & Requirements

**Prerequisites:** 110 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/Graduate

**Grading:** Letter grade.

**Instructor:** Vulpe

Molecular Toxicology: [Read Less](#) [-]

## NUSCTX 250 Advanced Topics in Metabolic Biology 3 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018

Overview lectures and discussion of primary literature will be combined in this course to provide a working knowledge of principles, regulation, and experimental approaches in metabolic biology. Select topics ranging from molecular mechanism of metabolite synthesis and cellular signaling to integrative physiology of organismal metabolic homeostasis will be discussed with a particular emphasis on their connection to human diseases.

Advanced Topics in Metabolic Biology: [Read More](#) [+]

### Objectives Outcomes

**Course Objectives:** Use selective topics in metabolic biology to provide a working understanding of basic concepts and technical approaches in metabolic biology.

**Student Learning Outcomes:** Students learning outcomes will be focused on their ability to derive basic concepts and technical approaches in metabolic biology from the lectures and primary literature discussion.

### Rules & Requirements

**Prerequisites:** Molecular and Cell Biology 102 or equivalent

### Hours & Format

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

### Additional Details

**Subject/Course Level:** Nutritional Sciences and Toxicology/Graduate

**Grading:** Letter grade.

**Instructor:** Nomura

Advanced Topics in Metabolic Biology: [Read Less](#) [-]

## NUSCTX 260 Metabolic Bases of Human Health and Diseases Graduate Level 4 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018

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. Metabolic Bases of Human Health and Diseases Graduate Level: Read More [+]

### Objectives Outcomes

**Course Objectives:** After completing the lectures and discussion sessions, students will have developed an advanced understanding of the contribution of nutrients and metabolic pathway regulation to the development of human diseases. This will be a direct extension and disease oriented application of the general metabolic pathways discussed in NST103. After this unit, the students will have gained insights into basic concepts in metabolic biology, their relationship to common disorders such as diabetes, cancer, and cardiovascular disease as well as the basis for metabolism based pharmacological interventions. In addition critical reading of primary literature and the presentation of advanced topics in metabolic biology will be practiced.

### Rules & Requirements

**Prerequisites:** MCB110, NST103 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/Graduate

**Grading:** Letter grade.

**Instructors:** Stahl, Napoli, Krauss

Metabolic Bases of Human Health and Diseases Graduate Level: Read Less [-]

## NUSCTX 290 Advanced Seminars in Nutritional Sciences 2 Units

Terms offered: Fall 2019, Fall 2018, Fall 2017

Advanced study of topics in nutritional sciences. More than one section may be taken simultaneously.

Advanced Seminars in Nutritional Sciences: Read More [+]

### Rules & Requirements

**Prerequisites:** Graduate standing

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

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

### Additional Details

**Subject/Course Level:** Nutritional Sciences and Toxicology/Graduate

**Grading:** Letter grade.

Advanced Seminars in Nutritional Sciences: Read Less [-]

## NUSCTX 292 Graduate Research Colloquium 1 Unit

Terms offered: Spring 2020, Fall 2019, Spring 2019

Presentations by graduate students of research proposals and results of their research. Participation in discussion and evaluation of others' presentations is required.

Graduate Research Colloquium: Read More [+]

### Rules & Requirements

**Prerequisites:** Graduate standing

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 1-2 hours of colloquium per week

### Additional Details

**Subject/Course Level:** Nutritional Sciences and Toxicology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

Graduate Research Colloquium: Read Less [-]

## **NUSCTX 293 Research Seminar 1 Unit**

Terms offered: Fall 2019, Fall 2018, Fall 2017

Presentation and discussion of faculty research projects and experimental techniques in metabolic biology/nutritional biochemistry.

Intended primarily for first year graduate students.

Research Seminar: Read More [\[+\]](#)

### **Rules & Requirements**

**Prerequisites:** Graduate standing or 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/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

Research Seminar: Read Less [\[-\]](#)

## **NUSCTX 296A Research Review in Nutritional Sciences and Toxicology 2 Units**

Terms offered: Spring 2020, Fall 2019, Spring 2019

Review of current literature and discussion of original research.

Research Review in Nutritional Sciences and Toxicology: Read More [\[+\]](#)

### **Rules & Requirements**

**Prerequisites:** Consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 1-2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Nutritional Sciences and Toxicology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

Research Review in Nutritional Sciences and Toxicology: Read Less [\[-\]](#)

## **NUSCTX 296B Research Review in Nutritional Sciences and Toxicology 2 Units**

Terms offered: Spring 2020, Spring 2019, Spring 2018

Review of current literature and discussion of original research.

Research Review in Nutritional Sciences and Toxicology: Read More [\[+\]](#)

### **Rules & Requirements**

**Prerequisites:** Consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 1-2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Nutritional Sciences and Toxicology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

Research Review in Nutritional Sciences and Toxicology: Read Less [\[-\]](#)

## **NUSCTX 296C Research Review in Nutritional Sciences and Toxicology 2 Units**

Terms offered: Spring 2020, Spring 2019, Spring 2018

Review of current literature and discussion of original research.

Research Review in Nutritional Sciences and Toxicology: Read More [\[+\]](#)

### **Rules & Requirements**

**Prerequisites:** Consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 1-2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Nutritional Sciences and Toxicology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

Research Review in Nutritional Sciences and Toxicology: Read Less [\[-\]](#)

## NUSCTX 296D Research Review in Nutritional Sciences and Toxicology 2 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018

Review of current literature and discussion of original research.

Research Review in Nutritional Sciences and Toxicology: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 1-2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Nutritional Sciences and Toxicology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

Research Review in Nutritional Sciences and Toxicology: Read Less [\[-\]](#)

## NUSCTX 296E Research Review in Nutritional Sciences and Toxicology 2 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018

Review of current literature and discussion of original research.

Research Review in Nutritional Sciences and Toxicology: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 1-2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Nutritional Sciences and Toxicology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

Research Review in Nutritional Sciences and Toxicology: Read Less [\[-\]](#)

## NUSCTX 296F Research Review in Nutritional Sciences and Toxicology 2 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018

Review of current literature and discussion of original research.

Research Review in Nutritional Sciences and Toxicology: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 1-2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Nutritional Sciences and Toxicology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

Research Review in Nutritional Sciences and Toxicology: Read Less [\[-\]](#)

## NUSCTX 296G Research Review in Nutritional Sciences and Toxicology 2 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018

Review of current literature and discussion of original research.

Research Review in Nutritional Sciences and Toxicology: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 1-2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Nutritional Sciences and Toxicology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

Research Review in Nutritional Sciences and Toxicology: Read Less [\[-\]](#)

## **NUSCTX 296H Research Review in Nutritional Sciences and Toxicology 2 Units**

Terms offered: Spring 2020, Spring 2019, Spring 2018

Review of current literature and discussion of original research.

Research Review in Nutritional Sciences and Toxicology: Read More [\[+\]](#)

### **Rules & Requirements**

**Prerequisites:** Consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 1-2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Nutritional Sciences and Toxicology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

Research Review in Nutritional Sciences and Toxicology: Read Less [\[-\]](#)

## **NUSCTX 296I Research Review in Nutritional Sciences and Toxicology 2 Units**

Terms offered: Spring 2020, Spring 2019, Spring 2018

Review of current literature and discussion of original research.

Research Review in Nutritional Sciences and Toxicology: Read More [\[+\]](#)

### **Rules & Requirements**

**Prerequisites:** Consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 1-2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Nutritional Sciences and Toxicology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

Research Review in Nutritional Sciences and Toxicology: Read Less [\[-\]](#)

## **NUSCTX 296J Research Review in Nutritional Sciences and Toxicology 2 Units**

Terms offered: Spring 2020, Spring 2019, Spring 2018

Review of current literature and discussion of original research.

Research Review in Nutritional Sciences and Toxicology: Read More [\[+\]](#)

### **Rules & Requirements**

**Prerequisites:** Consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 1-2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Nutritional Sciences and Toxicology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

Research Review in Nutritional Sciences and Toxicology: Read Less [\[-\]](#)

## **NUSCTX 296K Research Review in Nutritional Sciences and Toxicology 2 Units**

Terms offered: Spring 2014, Spring 2013, Spring 2012

Review of current literature and discussion of original research.

Research Review in Nutritional Sciences and Toxicology: Read More [\[+\]](#)

### **Rules & Requirements**

**Prerequisites:** Consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 1-2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Nutritional Sciences and Toxicology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

Research Review in Nutritional Sciences and Toxicology: Read Less [\[-\]](#)



## NUSCTX 296L Research Review in Nutritional Sciences and Toxicology 2 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018

Review of current literature and discussion of original research.

Research Review in Nutritional Sciences and Toxicology: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 1-2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Nutritional Sciences and Toxicology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

Research Review in Nutritional Sciences and Toxicology: Read Less [\[-\]](#)

## NUSCTX 298 Directed Group Studies 1 - 4 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

Special study in various fields of metabolic biology. Topics vary depending on interests of graduate students and availability of staff.

Directed Group Studies: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Graduate standing and consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 1-4 hours of independent study per week

### Additional Details

**Subject/Course Level:** Nutritional Sciences and Toxicology/Graduate

**Grading:** Letter grade.

Directed Group Studies: Read Less [\[-\]](#)

## NUSCTX 299 Nutritional Sciences and Toxicology Research 1 - 12 Units

Terms offered: Summer 2020 8 Week Session, Summer 2020 Second 6 Week Session, Spring 2020

Nutritional Sciences and Toxicology Research: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Graduate standing and consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

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

### Summer:

6 weeks - 2.5-30 hours of independent study per week

8 weeks - 1.5-22.5 hours of independent study per week

10 weeks - 1.5-18 hours of independent study per week

### Additional Details

**Subject/Course Level:** Nutritional Sciences and Toxicology/Graduate

**Grading:** Letter grade.

**Formerly known as:** Nutritional Sciences 299

Nutritional Sciences and Toxicology Research: Read Less [\[-\]](#)

## NUSCTX 302 Professional Preparation: Supervised Teaching Experience in Nutrition 1 - 4 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

Practical supervised experience in teaching nutrition and food science at the university level; planning, presentation, and evaluation of instructional units.

Professional Preparation: Supervised Teaching Experience in Nutrition: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** 301 (may be taken concurrently) and consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

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

### Additional Details

**Subject/Course Level:** Nutritional Sciences and Toxicology/Professional course for teachers or prospective teachers

**Grading:** Letter grade.

**Instructor:** Bjeldanes

**Formerly known as:** Nutritional Sciences 302

Professional Preparation: Supervised Teaching Experience in Nutrition: Read Less [\[-\]](#)

## **NUSCTX 375 Professional Preparation: Teaching in Nutritional Sciences 1 - 2 Units**

Terms offered: Not yet offered

Creative approaches to teaching nutrition to diverse audiences are emphasized. Participants will identify needs of target populations, formulate educational objectives, design and/or use motivational teaching strategies, and evaluate the impact of their teaching on knowledge, attitudes, and behavior. Undergraduates may teach nutrition to elementary school children. Graduates may become teaching assistants. Professional Preparation: Teaching in Nutritional Sciences: Read More

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### **Rules & Requirements**

**Prerequisites:** Consent of instructor

**Credit Restrictions:** Students will receive no credit for NUSCTX 375 after completing NUTRSCI 301.

### **Hours & Format**

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

### **Additional Details**

**Subject/Course Level:** Nutritional Sciences and Toxicology/Professional course for teachers or prospective teachers

**Grading:** Letter grade.

**Formerly known as:** Nutritional Sciences and Toxicology 301

Professional Preparation: Teaching in Nutritional Sciences: Read Less [-]

## **NUSCTX 602 Individual Study for Doctoral Students 1 - 8 Units**

Terms offered: Fall 2019, Fall 2018, Fall 2017

Individual study in consultation with the major field adviser intended to provide an opportunity for qualified students to prepare themselves for the various examinations required for candidates for the Ph.D.

Individual Study for Doctoral Students: Read More [+]

### **Rules & Requirements**

**Prerequisites:** Graduate standing and consent of instructor

**Credit Restrictions:** Course does not satisfy unit or residence requirements for doctoral degree.

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

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

### **Summer:**

6 weeks - 1-5 hours of independent study per week

8 weeks - 1-4 hours of independent study per week

### **Additional Details**

**Subject/Course Level:** Nutritional Sciences and Toxicology/Graduate examination preparation

**Grading:** Offered for satisfactory/unsatisfactory grade only.

Individual Study for Doctoral Students: Read Less [-]