

Nutritional Sciences: Toxicology

Bachelor of Science (BS)

The Department of Nutritional Sciences and Toxicology offers two undergraduate major program specializations: Physiology and Metabolism and Toxicology leading to a Bachelor of Science (BS) degree. **NOTE: The Nutritional Science - Dietetics major specialization has transitioned as of Fall 2024 to a graduate program following the ACEND guidelines which will require a graduate degree (the Master's degree in Nutritional Sciences and Dietetics (<https://nst.berkeley.edu/mnsd/about/>)) for participation in the required dietetic internship for licensure.**

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 the 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 Rausser College of Natural Resources Prospective Student website (<https://nature.berkeley.edu/prospective-students/>). Freshmen students apply to the Nutritional Science B.S. major and then declare their specialization in Toxicology once they have completed the required subset of prerequisites for this major specialization (<https://nature.berkeley.edu/sites/default/files/FINAL%2520FOR%2520CNR%2520Student%2520Declaring%2520Major%252011-15.pdf>). Freshmen applying to Rausser College may also select the Rausser College 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. **As of Fall 2023, applicants (both First Year/Freshman admits or Transfer admits) can no longer apply to the Toxicology major specialization. This is due to departmental and curriculum changes.**

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, can be found on Rausser College's Change of College website. (<https://nature.berkeley.edu/advising/change-college/>)

Rausser College 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 thesis report. Acceptance in the Rausser College Honors Program is required through an application process. 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. Please visit Rausser College's Honors webpage (<https://nature.berkeley.edu/advising/honors-program/>) to learn more.

Other Programs Offered by the Department of Nutritional Sciences and Toxicology

Nutritional Sciences: Physiology and Metabolism (<https://guide.berkeley.edu/undergraduate/degree-programs/physiology-and-metabolism/>)

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/2015-16/undergraduate/degree-programs/nutritional-science/#majorrequirementstext>).

The Rausser College of Natural Resources 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 coursework in American Cultures, Foreign Language departments, or any of these Breadth Categories: Arts & Literature, Historical Studies, International Studies, Philosophy & Values, or Social & Behavioral Sciences. Please refer to the L&S seven course breadth categories here (<https://lsadvising.berkeley.edu/seven-course-breadth/>):

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	Course Not Available and Course Not Available and Introduction to Statistics	4
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	6

CHEM 3B & 3BL	Chemical Structure and Reactivity and Organic Chemistry Laboratory	6
PHYSICS 8A	Introductory Physics	4
NUSCTX 11	Introduction to Toxicology	3
MCELLBI 32 & 32L	Introduction to Human Physiology and Introduction to Human Physiology Laboratory	5-6
or INTEGBI 13: Human Physiology & 132L	Human Physiology and Human Physiology Laboratory	
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 120	Therapeutics Discovery and Development (due to changes in the Toxicology department, students will take this to satisfy NUSCTX 110 requirement.)	4
NUSCTX 103	Nutrient Function and Metabolism (or MCELLBI 136 [4])	4
NUSCTX 160	Metabolic Bases of Human Health and Diseases (due to changes in the Toxicology department, students will take this to satisfy NUSCTX 121 requirement)	4
NUSCTX 170	Experimental Nutrition Laboratory	4
NUSCTX 190	Introduction to Research in Nutritional Sciences (due to changes in the Toxicology department, students will take this to satisfy NUSCTX 193 requirement.)	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 162	Bioethics and Society	4
ESPM 162A	Health, Medicine, Society and Environment	4
ESPM C180	Air Pollution	3
INTEGBI 117	Medical Ethnobotany	2
NUSCTX 120	Eating Behavior and Disordered Eating	2
INTEGBI 131	General Human Anatomy	3
INTEGBI 131L	General Human Anatomy Laboratory	3
NUSCTX H196	Honors Research	4
NUSCTX C130	Cell Biology: from Discovery to Disease	4
NUSCTX 199	Supervised Independent Study and Research	1-4
PB HLTH 150A	Introduction to Epidemiology and Human Disease	4
PB HLTH 150B	Human Health and the Environment in a Changing World	3
UGIS 192C	Supervised Research: Biological Sciences	1-4
Other CHEM, INTEGBI, MCELLBI, PLANTBI lecture or lab courses, and any other approved courses on the Nutritional Sciences - Physiology and Metabolism electives list also accepted		

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 Rausser 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 Inter-campus Visitor or Exchange Programs.
7. A maximum of 4 units of physical education courses will count toward the 120 units required for graduation.

For full details around all requirements, please see our Student Handbook (<https://nature.berkeley.edu/handbook/>):

Reading and Composition (<http://guide.berkeley.edu/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/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/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

The Physiology and Metabolism and Toxicology specializations both have a 14 unit breadth requirement for the major. Breadth courses must be taken for a letter grade. These units do not need to fall under specific breadth areas like in Letters & Science, but instead students can use as many units as they would like from any of the following areas:

- Arts & Literature
- Historical Studies
- International Studies
- Philosophy & Values

- Social & Behavioral Sciences
- Foreign Language coursework
- American Cultures
- AP/IB/A-Level exam credit in subject areas which exclude calculus/statistics, English, and any biological or physical science subjects

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

High School Exam Credit

RCNR 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 RCNR 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 from a Rausser College of Natural Resources department (NUSCTX, ESPM, PLANTBI, ENVECON).
- 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 RCNR students must enroll in at least 12 units each fall and spring semester

Semester Unit Maximum

To request permission to take more than 20.5 units in a semester, please talk with your major advisor.

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. RCNR does not limit the number of total units a student can accrue (no unit cap).

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 Rausser 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 RCNR. 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 will 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 six 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 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 advisor 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.

Nutritional Science and Toxicology 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).

Major maps are experience maps that help undergraduates plan their Berkeley journey based on intended major or field of interest. Featuring student opportunities and resources from your college and department

as well as across campus, each map includes curated suggestions for planning your studies, engaging outside the classroom, and pursuing your career goals in a timeline format.

Use the major map below to explore potential paths and design your own unique undergraduate experience:

View the Nutritional Sciences Major Map PDF. (https://vcue.berkeley.edu/sites/default/files/nutritional_sciences.pdf)

In the Rausser 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 advisor for your intended major. Visit our website (<https://nature.berkeley.edu/advising/meet-cnr-advisors/>) to explore all of our advising services.

Undergraduate Advisor, Nutritional Science & Toxicology

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NUSCTX 10 Introduction to Human Nutrition 3 Units

Terms offered: Fall 2025, Summer 2025 First 6 Week Session, Summer 2025 Second 6 Week Session

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.

Rules & Requirements

Credit Restrictions: Students will receive no credit for NUSCTX 10 after completing NUTRSCI 10, NUTRSCI S10X, or NUSCTX 10S. A deficient grade in NUSCTX 10 may be removed by taking NUSCTX 10S.

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.

NUSCTX 10S Introduction to Human Nutrition: Managing Life 3 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023

The course will center on how the body processes nutrients, as well as other components of diet such as water, alcohol, and plant constituents. We will explore how these processes can have a lasting effect on our health and behavior. Students will gain a general understanding of basic human nutrition, how key biological, physical, social and psychological factors affect how we eat. The goal is that students gain sufficient knowledge to be able to make informed dietary choices based on individual nutritional needs, and to understand how these choices can have a long lasting impact on one's life. The lecture will be delivered in two modalities 1) In-person lectures 2) Lectures will be streamed and recorded for viewing later.

Rules & Requirements

Credit Restrictions: Students will receive no credit for NUSCTX 10S after completing NUSCTX 10. A deficient grade in NUSCTX 10S may be removed by taking NUSCTX 10.

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.

Instructor: Aponte

NUSCTX 11 Introduction to Toxicology 3 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023

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 20 Personal Food Security and Wellness 2 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024

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 who 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.

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.

NUSCTX 24 Freshman Seminar 1 Unit

Terms offered: Fall 2025, Fall 2024, Fall 2023

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 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

NUSCTX 30 Sports Nutrition 3 Units

Terms offered: Summer 2025 Second 6 Week Session, Summer 2024 Second 6 Week Session, Summer 2023 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.

Rules & Requirements

Prerequisites: None

Hours & Format

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

Summer:

6 weeks - 6 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.

NUSCTX 98 Directed Group Study 1 - 3 Units

Terms offered: Spring 2025, Fall 2024, Fall 2023

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 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

NUSCTX 103 Nutrient Function and Metabolism 4 Units

Terms offered: Fall 2025, Fall 2024, Fall 2023

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: 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, Chen

NUSCTX 104 Food, Culture, and the Environment 2 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023

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.

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 104AC Human Food Practices AC 3 Units

Terms offered: Prior to 2007

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.

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

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

Terms offered: Summer 2025 8 Week Session, Summer 2024 8 Week Session, Summer 2023 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.

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 and 0 hours of web-based discussion 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

NUSCTX 105 Mediterranean Nutrition and Food System 3 Units

Terms offered: Summer 2025 10 Week Session, Summer 2024 10 Week Session, Summer 2023 10 Week Session

Studies consistently demonstrate that the Mediterranean dietary pattern reduces risk of chronic disease and adherence rates are higher compared to other diets prescribed to promote health. More recently, the Mediterranean diet is highlighted as a diet with a relatively lower environmental impact. This course will examine the key elements of the Mediterranean diet, compare different types of Mediterranean diets, and discuss how beneficial aspects of this diet are found around the world. Additionally, students in this course will study food systems through specific ingredients produced on the beautiful and culturally rich island of Chios, Greece, where the course is based.

Hours & Format

Summer: 4 weeks - 6 hours of lecture, 12 hours of discussion, and 4 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 108A Introduction and Application of Food Science 3 Units

Terms offered: Fall 2025, Fall 2024, Fall 2023

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.

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 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.

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

NUSCTX 120 Eating Behavior and Disordered Eating 2 Units

Terms offered: Fall 2024, Fall 2023, Spring 2012

This course will be to provide the tools necessary to begin the processes of understanding the interplay between our physiological needs for food and the external factors affecting our behavior that can override our body's needs. We will cover some basic concepts of nutrient metabolism, that relates to our physiology which is affected by environmental and social factors. Broad areas included will be: The importance of food as energy, Gut-brain axis and food intake regulation, Self-induced restrictive eating behavior and semi starvation, Programming of eating patterns, and the use of nutrients as a drug.

Rules & Requirements

Prerequisites: NUSCTX 10 or NUSCTX 10S recommended but not required

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. Alternative to final exam.

Instructor: Aponte

NUSCTX C130 Cell Biology: from Discovery to Disease 4 Units

Terms offered: Spring 2025, Spring 2024

This course will investigate a wide range of topics in cell biology, focusing on modern and classic experimental approaches that have provided important insights, and the relevance of their findings to understanding human health and disease. We will emphasize the importance of quantitative understanding in research topics that are current areas of discovery. We aim to convey an understanding of how cellular structure and function arise as a result of the properties of macromolecules and how understanding the behavior of molecules is needed to explain how cells and organisms operate. This understanding thus also explains what happens when normal cellular functions are impacted, leading to cellular dysfunction and disease.

Rules & Requirements

Prerequisites: Upper Division Standing; MCELLBI 102 or MCELLBI C100A

Credit Restrictions: Students will receive no credit for MCELLBI 130 after completing MCELLBI 130.

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.

Formerly known as: Molecular and Cell Biology 130

Also listed as: MCELLBI C130

NUSCTX 135 Food Systems Organization and Management 4 Units

Terms offered: Spring 2023, Spring 2022, Spring 2021

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 160 Metabolic Bases of Human Health and Diseases 4 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023

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: 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

NUSCTX 161B Medical Nutrition Therapy II 4 Units

Terms offered: Spring 2023, Spring 2022, Spring 2021

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

Terms offered: Spring 2025, Spring 2024, Fall 2022

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

Terms offered: Fall 2025, Spring 2025, Fall 2024

This course explores basic principles and techniques used in human and animal nutrition and metabolism research. Each class session starts with a lecture that will provide background on the experimental technique(s) that you will be using in lab and describe similar techniques used in metabolic research. Then, students work in pairs in the lab designing and performing experiments as well as analyzing data. Students will also present the data they obtain and write a report in the style of a scientific paper.

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 - 2 hours of lecture and 6 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 190 Introduction to Research in Nutritional Sciences 1 Unit

Terms offered: Fall 2025, Spring 2025, Fall 2024

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 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.

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 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

NUSCTX 197 Field Study in Food and Nutritional Sciences 1 - 4 Units

Terms offered: Summer 2025 10 Week Session, Summer 2024 10 Week Session, Summer 2023 10 Week Session

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 without restriction.

Hours & Format

Fall and/or spring: 15 weeks - 1-4 hours of fieldwork per week

Summer:

6 weeks - 1-9 hours of fieldwork per week

8 weeks - 1-7 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

Terms offered: Spring 2025, Fall 2024, Spring 2024

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 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

NUSCTX 199 Supervised Independent Study and Research 1 - 4 Units

Terms offered: Fall 2021, Fall 2017, Fall 2016

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 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

NUSCTX 199S Sponsored Projects for Undergraduate Research (SPUR) 1 - 4 Units

Terms offered: Prior to 2007

The Sponsored Projects for Undergraduate Research (SPUR) program helps students get involved in research projects with world renowned faculty and staff researchers in the Rausser College of Natural Resource

Rules & Requirements

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

Hours & Format

Fall and/or spring: 15 weeks - 3-12 hours of independent study per week

Summer: 12 weeks - 5-18 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.
Alternative to final exam.

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.

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

NUSCTX 201 Metabolic Regulation 2 Units

Terms offered: Fall 2023

This Course will provide a graduate-level view of metabolism spanning the physiological, biochemical and molecular aspects of metabolic homeostasis. The course will emphasize four areas: history of metabolism research across primarily mammalian species; past and current available methodological tools to understand metabolism; established and emerging principles of metabolic regulation, with lessons learned from classic physiological and biochemical investigations, isotope tracing and modern molecular techniques and the clinical assessment of metabolism and targeting of metabolic regulation/signaling, including the therapeutic application of diet, pharmaceuticals, cell therapies, tissue culture/engineering, and genetic medicine.

Rules & Requirements

Prerequisites: Consent of instructor

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.

Formerly known as: Nutritional Sciences 201

NUSCTX 208 Foods 4 Units

Terms offered: Spring 2025, Spring 2024

The course will begin by discovering the science of foods; the functional role of foods as ingredients; and the impact on food quality, acceptability and compatibility as measured by sensory evaluation methods. Students will then integrate their knowledge of chemistry and food science by modifying recipes for wellness and disease prevention and management. Students will explore food preparation techniques and world cuisines to further their appreciation of foods, eating patterns, and food trends across cultures. Students will apply principles of food safety and sanitation to the procurement, storage and production of foods. This course is designed to prepare MNDS students for supervised practice internships and a career as a registered dietitian.

Objectives & Outcomes

Course Objectives: Applies an understanding of complementary and integrative nutrition by exploring culinary medicine and functional foods . (1.9.2).

Applies and demonstrates an understanding of agricultural practices and processes (3.4).

Applies principles of food safety and sanitation to the storage, production and service of food (3.3).

Demonstrates knowledge of and is able to manage food preparation techniques (1.12).

Develops and leads implementation of risk management strategies and programs. (5.5)

Gains a foundational knowledge on public and global health issues and nutritional needs by examining the sustainability and global supply of ingredients. (1.16, 1.16.2).

Integrates knowledge of chemistry and food science as it pertains to food and nutrition product development and when making modifications to food. (1.4).

Integrates the principles of cultural competence within own practice and when directing services (1.7).

The objective of the course is to provide an opportunity for students to meet the following Accreditation Council for Education in Nutrition and Dietetics competencies (competency number):

Applies knowledge of microbiology and food safety (1.3).

Rules & Requirements

Prerequisites: graduate student standing, course reserved for students in the MNDS program

Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture and 6 hours of laboratory per week

Additional Details

Subject/Course Level: Nutritional Sciences and Toxicology/Graduate

Grading: Letter grade.

NUSCTX 210 Research Methods & Analysis in Nutritional Science 4 Units

Terms offered: Fall 2025, Fall 2024, Fall 2023

This course will familiarize students with current methodologies of assessing nutritional status through molecular biology, clinical/biochemical analysis, and dietary experimentation and analysis. Upon completion of this course, students will understand the work of a nutrition scientist, including asking scientific questions and generating hypotheses, using creativity and critical thinking to develop experimental design and execute laboratory procedures, as well as interpreting data and presenting (written and oral) findings from results obtained. Throughout the course, students will perform several nutritional assessments and compare and contrast the results to those obtained from a controlled analytical method and/or specimen.

Objectives & Outcomes

Course Objectives: Applies an understanding of environmental, molecular factors (e.g., genes, proteins, metabolites) and food in the development and management of disease. (1.1)

Applies current research and evidence-informed practice to services. (6.3)

Applies knowledge of math and statistics. (1.10)

Applies scientific methods utilizing ethical research practices when reviewing, evaluating, and conducting research. (6.2)

Demonstrates computer skills and uses nutrition informatics in the decision making process (1.13)

Incorporates critical thinking skills in practice. (6.1)

Uses effective communication, collaboration and advocacy skills. (7.2)

Rules & Requirements

Prerequisites: graduate student standing, course reserved for students in the MNSD program

Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture and 6 hours of laboratory per week

Additional Details

Subject/Course Level: Nutritional Sciences and Toxicology/Graduate

Grading: Letter grade.

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

Terms offered: Fall 2025, Fall 2024, Fall 2023

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

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

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

Terms offered: Spring 2025, Spring 2024, Spring 2023

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

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

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.

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

NUSCTX 235 Food Systems Management 4 Units

Terms offered: Fall 2025, Fall 2024, Fall 2023

Principles of organization and management applied to institutional food service systems will be discussed and applied in this graduate level course. Topics will range from production and delivery systems, management of resources, quality assurance, equipment, layout, marketing, personnel management and fiscal management. Students will apply concepts through laboratory experiences, projects and engagement with institutional settings. ServSafe certification exam must be completed by the end of the semester.

Objectives & Outcomes

Course Objectives: Applies knowledge of math and statistics.

Applies principles of food safety and sanitation to the storage, production and service of food.

Demonstrates knowledge of and is able to manage food preparation techniques.

Demonstrates computer skills and uses nutrition informatics in the decision making process.

Oversees the purchasing, receipt and storage of products used in food production and services.

Applies a framework to assess, develop, implement and evaluate products, programs and services.

Applies and demonstrates an understanding of agricultural practices and

processes.

Applies knowledge of social, psychological and environmental aspects of eating and food. / 1.6.3 Integrates knowledge of maximizing sustainability, food and water waste, reusable/ biodegradable items, local and global produce sourcing and access to food.

Applies principles of organization management.

Applies project management principles to achieve project goals and objectives.

Demonstrates leadership skills to guide practice.

Develops and leads implementation of risk management strategies and programs.

Directs the production and distribution of quantity and quality food products.

Leads quality and performance improvement activities to measure, evaluate and

improve program services, products and initiatives.

Rules & Requirements

Prerequisites: graduate student standing, course reserved for students in the MNSD program

Hours & Format

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

Additional Details

Subject/Course Level: Nutritional Sciences and Toxicology/Graduate

Grading: Letter grade.

NUSCTX 245 Counseling in Nutritional Sciences 2 Units

Terms offered: Fall 2025, Fall 2024

This graduate level course will focus on applying behavior change theory in nutrition counseling. Strategies for effective nutrition counseling and behavior change will be discussed. Students will apply the Nutrition Care Process and utilize appropriate Medical Nutrition Therapy and theory-driven interventions to address behavior change. Integrated practice will occur through mock counseling sessions and role playing activities for various populations and conditions. This course is designed to prepare MNSD students for supervised practice internships and a career as a Registered Dietitian Nutritionist.

Objectives & Outcomes

Course Objectives: Applies knowledge of nutritional health promotion and disease prevention for individuals, groups and populations. (1.15)
Applies knowledge of social, psychological and environmental aspects of eating and food. (1.6)
Assumes professional responsibilities to provide safe, ethical and effective nutrition services. (7.1)
Implements or coordinates nutritional interventions for individuals, groups or populations.(2.4)
Integrates knowledge of nutrition and physical activity in the provision of nutrition care across the life cycle. (1.14)
Integrates the principles of cultural competence within own practice and when directing services. (1.7)
Uses effective communication, collaboration and advocacy skills. (7.2)
Utilizes the nutrition care process with individuals, groups or populations in a variety of practice settings. (2.3)

Rules & Requirements

Prerequisites: NST 261, Nutritional Assessment and the Lifespan, graduate student standing, course reserved for students in the MNSD program

Hours & Format

Fall and/or spring: 7 weeks - 2 hours of lecture and 2 hours of workshop per week

Additional Details

Subject/Course Level: Nutritional Sciences and Toxicology/Graduate

Grading: Letter grade.

NUSCTX 250 Advanced Topics in Metabolic Biology 3 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023

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.

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

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

Terms offered: Spring 2025, Spring 2024, Spring 2023

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.

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

NUSCTX 261 Nutrition Care Process and the Lifespan 4 Units

Terms offered: Fall 2025, Fall 2024, Fall 2023

Course explores nutritional status across the lifespan. The NCP will be utilized as a framework to explore nutritional care throughout the lifespan. Students will determine nutritional status by considering anthropometrics and physical assessment, biochemical data, clinical findings, dietary intake, complementary and integrative therapies, and physical activity. Disease pathophysiology, diagnosis, medical and pharmacological treatments, and nutritional therapies and nutrition-related pharmacotherapy will be discussed for conditions common across the lifespan. Students will be responsible for utilizing medical terminology and documentation and for identifying relevant current research to support their nutritional recommendations.

Objectives & Outcomes

Course Objectives: Applies an understanding of anatomy, physiology and biochemistry. (1.2)

Applies an understanding of environmental, molecular factors (e.g. genes, proteins, metabolites) and food in the development and management of disease. (1.1)

Applies an understanding of the impact of complementary and integrative nutrition on drugs, disease, health and wellness. (1.9)

Applies current research and evidence-informed practice to services. (6.3)

Applies knowledge of medical terminology when communicating with individuals, groups and other health professionals. (1.11)

Applies knowledge of nutritional health promotion and disease prevention for individuals, groups and populations. (1.15)

Applies knowledge of pathophysiology and nutritional biochemistry to physiology, health and disease. (1.5)

Applies knowledge of pharmacology to recommend, prescribe and administer medical nutrition therapy. (1.8)

Applies knowledge of social, psychological and environmental aspects of eating and food. (1.6)

Implements or coordinates nutritional interventions for individuals, groups or populations. (2.4)

Incorporates critical thinking skills in practice. (6.1)

Integrates knowledge of nutrition and physical activity in the provision of nutrition care across the life cycle. (1.14)

Integrates nutritional biochemistry knowledge to make informed food and nutrition decisions for optimal health. (1.4.2)

Prescribes, recommends and administers nutrition-related pharmacotherapy. (2.5)

Selects, develops and/or implements nutritional screening tools for individuals, groups or populations. (2.2)

Utilizes the nutrition care process with individuals, groups or populations in a variety of practice settings. (2.3)

Rules & Requirements

Prerequisites: graduate student standing, course reserved for students in the MNSD program

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 2 hours of discussion per week

Additional Details

Subject/Course Level: Nutritional Sciences and Toxicology/Graduate

Grading: Letter grade.

NUSCTX 262 Medical Nutrition Therapy 4 Units

Terms offered: Spring 2025, Spring 2024

The Nutrition Care Process of the Academy of Nutrition and Dietetics will be used to explore disease pathophysiology, diagnosis, medical and pharmacological treatments, and nutritional therapies. Students will examine and apply an understanding of complementary and integrative nutritional therapies on drugs, disease, and health. The conditions that will be studied include cardiovascular disease, upper and lower gastrointestinal diseases, hepatic disease, renal disease, diabetes, diseases of the pancreas, cancer, HIV/AIDS, pulmonary disease, and critical illness. Students will be responsible for utilizing medical terminology and documentation and for identifying relevant current research to support their nutritional recommendations.

Objectives & Outcomes

Course Objectives: Applies an understanding of anatomy, physiology and biochemistry. (1.2)

Applies an understanding of environmental, molecular factors (e.g. genes, proteins, metabolites) and food in the development and management of disease. (1.1)

Applies an understanding of the impact of complementary and integrative nutrition on drugs, disease, health and wellness. (1.9)

Applies current research and evidence-informed practice to services. (6.3)

Applies knowledge of math and statistics. (1.10)

Applies knowledge of medical terminology when communicating with individuals, groups and other health professionals. (1.11)

Applies knowledge of nutritional health promotion and disease prevention for individuals, groups and populations. (1.15)

Applies knowledge of pathophysiology and nutritional biochemistry to physiology, health and disease. (1.5)

Applies knowledge of pharmacology to recommend, prescribe and administer medical nutrition therapy. (1.8)

Implements or coordinates nutritional interventions for individuals, groups or populations. (2.4)

Incorporates critical thinking skills in practice. (6.1)

Integrates nutritional biochemistry knowledge to make informed food and nutrition decisions for optimal health. (1.4.2)

Prescribes, recommends and administers nutrition-related pharmacotherapy. (2.5)

Utilizes the nutrition care process with individuals, groups or populations in a variety of practice settings. (2.3)

Rules & Requirements

Prerequisites: graduate student standing, course reserved for students in the MNSD program

Hours & Format

Fall and/or spring: 10 weeks - 6 hours of lecture and 2 hours of discussion per week

Additional Details

Subject/Course Level: Nutritional Sciences and Toxicology/Graduate

Grading: Letter grade.

NUSCTX 266 Nutrition in the Community 3 Units

Terms offered: Spring 2025, Spring 2024

Course addresses nutrition in the context of the community and population. 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. The course provides an opportunity for community assessment, program planning, implementation, and evaluation. The history, science, current issues and innovations involved in improving nutrition among various communities will be presented. Nutritional concerns, including food security and global health, will be discussed. This course is designed to prepare MNSD students for supervised practice internships and a career as a RDN.

Objectives & Outcomes

Course Objectives: Applies a framework to assess, develop, implement and evaluate products, programs and services. (2.1)

Applies knowledge of nutritional health promotion and disease prevention for individuals, groups and populations. (1.15)

Applies knowledge of social, psychological and environmental aspects of eating and foods. (1.6)

Engages in legislative and regulatory activities that address community, population and global nutrition health and nutrition policy. (4.2)

Gains a foundational knowledge on public and global health issues and nutritional needs. (1.16)

Implements or coordinates nutritional interventions for individuals, groups or populations. (2.4)

Utilizes program planning steps to develop, implement, monitor and evaluate community and population programs. (4.1)

Rules & Requirements

Prerequisites: graduate student standing, course reserved for students in the MNSD program

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.

NUSCTX 290 Advanced Seminars in Nutritional Sciences 2 Units

Terms offered: Fall 2025, Fall 2024, Fall 2023

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

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.

NUSCTX 292 Graduate Research Colloquium 1 Unit

Terms offered: Fall 2025, Spring 2025, Fall 2024

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

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.

NUSCTX 293 Research Seminar 1 Unit

Terms offered: Fall 2025, Fall 2024, Fall 2023

Presentation and discussion of faculty research projects and experimental techniques in metabolic biology/nutritional biochemistry. Intended primarily for first year graduate students.

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.

NUSCTX 294 Dietetics Professional Practice 2 Units

Terms offered: Spring 2025

This course is intended to enhance student understanding and appreciation of professional responsibilities and conduct as future dietetic professionals. Current topics in the field of nutritional sciences and dietetics will be discussed. The course will provide a platform for students to begin to prepare for the registered dietitian nutritionist credentialing examination.

Objectives & Outcomes

Course Objectives: Demonstrates coding and billing procedures to obtain payment for nutrition services under alternate health care payment models. (2.3.27)

Demonstrates leadership skills to guide practice. (5.1)

Develops and leads implementation of risk management strategies and programs. (5.5)

Engages in legislative and regulatory activities that address community, population and global nutrition health and nutrition policy. (4.2)

Uses effective communication, collaboration and advocacy skills. (7.2)

Hours & Format

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

Additional Details

Subject/Course Level: Nutritional Sciences and Toxicology/Graduate

Grading: Letter grade.

NUSCTX 295 Capstone Project in Nutritional Sciences 11 Units

Terms offered: Prior to 2007

The Capstone course gives students the opportunity to synthesize their graduate level course work by connecting their academic knowledge from their coursework to a capstone research project. Students will learn new research techniques and approaches and broaden their exposure to nutrition research. The project will entail a technical research poster and presentation of their work.

Objectives & Outcomes

Course Objectives: Applies an understanding of environmental, molecular factors (e.g. genes, proteins, metabolites) and food in the development and management of disease. (1.1)

Applies current research and evidence-informed practice to services. (6.3)

Applies knowledge of math and statistics. (1.10)

Applies project management principles to achieve project goals and objectives. (5.3)

Applies scientific methods utilizing ethical research practices when reviewing, evaluating, and conducting research. (6.2)

Demonstrates computer skills and uses nutrition informatics in the decision making process (1.13)

Incorporates critical thinking skills in practice. (6.1)

Uses effective communication, collaboration and advocacy skills. (7.2)

Hours & Format

Summer: 10 weeks - 40 hours of laboratory per week

Additional Details

Subject/Course Level: Nutritional Sciences and Toxicology/Graduate

Grading: Letter grade.

Instructor: King

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

Terms offered: Spring 2025, Spring 2024, Spring 2023

Review of current literature and discussion of original research.

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.

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

Terms offered: Spring 2025, Spring 2024, Spring 2023

Review of current literature and discussion of original research.

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.

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

Terms offered: Spring 2025, Spring 2024, Spring 2023

Review of current literature and discussion of original research.

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.

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

Terms offered: Spring 2025, Spring 2024, Spring 2023

Review of current literature and discussion of original research.

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.

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

Terms offered: Spring 2025, Spring 2024, Spring 2023
Review of current literature and discussion of original research.

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.

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

Terms offered: Spring 2025, Spring 2024, Spring 2023
Review of current literature and discussion of original research.

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.

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

Terms offered: Spring 2025, Spring 2024, Spring 2023
Review of current literature and discussion of original research.

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.

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

Terms offered: Spring 2025, Spring 2024, Spring 2023
Review of current literature and discussion of original research.

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.

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

Terms offered: Spring 2025, Spring 2024, Spring 2023
Review of current literature and discussion of original research.

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.

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

Terms offered: Spring 2025, Spring 2024, Spring 2023
Review of current literature and discussion of original research.

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.

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.

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.

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

Terms offered: Spring 2025, Spring 2024, Spring 2023

Review of current literature and discussion of original research.

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.

NUSCTX 298 Directed Group Studies 1 - 4 Units

Terms offered: Fall 2025, Fall 2024, Fall 2023

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

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.

NUSCTX 299 Nutritional Sciences and Toxicology Research 1 - 12 Units

Terms offered: Summer 2025 8 Week Session, Spring 2025, Spring 2024

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

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

Terms offered: Fall 2025, Spring 2025, Spring 2024

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

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

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

Terms offered: Fall 2025, Fall 2024, Fall 2023

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.

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

NUSCTX 400 Supervised Practice in Dietetics 2 - 12 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024

This course will allow students the opportunity to apply their knowledge from their academic courses, build and practice skills, and demonstrate competency as an entry-level registered dietitian nutritionist under the supervision of a qualified professional.

Objectives & Outcomes

Course Objectives: The objective of the course and its rotations is to demonstrate competency in the Accreditation Council for Education in Nutrition and Dietetics (ACEND) competency performance indicators. Each rotation's specific competencies, and the level of mastery (knows, shows or does) can be found on the program's curriculum map.

Rules & Requirements

Repeat rules: Course may be repeated for credit when topic changes. Students may enroll in multiple sections of this course within the same semester.

Hours & Format

Fall and/or spring: 15 weeks - 3-18 hours of internship per week

Additional Details

Subject/Course Level: Nutritional Sciences and Toxicology/Other professional

Grading: Offered for satisfactory/unsatisfactory grade only.

NUSCTX 602 Individual Study for Doctoral Students 1 - 8 Units

Terms offered: Fall 2023, Fall 2022, Fall 2021

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.

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.