

# NUTRITIONAL SCIENCES, BS

Nutritional sciences is the study of the biochemical and physiological basis of how diet impacts health and disease. Students explore a variety of biological concepts including biochemistry, genetics, microbiology, kinesiology, community nutrition, and epidemiology to understand how nutrients in food affect the body.

Students can tailor their studies by selecting from more than 20 courses covering a wide variety of topics, including, microbiology, genetics, obesity, metabolism, kinesiology and sports nutrition, as well as ethics of public health, global health, community nutrition, and cultural aspects of food. Many students supplement their studies outside of the classroom by contributing to research in a university lab or volunteering in the community.

With an emphasis on human health, the program prepares students for health and research careers in a variety of settings, including healthcare, education, corporate wellness, sports nutrition, government agencies, food companies, or pharmaceuticals.

## LEARN THROUGH HANDS-ON, REAL-WORLD EXPERIENCE

In the classroom, students apply what they learn to real-world cases and approach nutritional health as they would in a clinical setting. Some courses also include field experiences or community-based learning experiences.

Because of the emphasis on biological sciences, many students choose to join a professor's research lab and may earn credit for their work within the lab. Students also have opportunities for community service internships under the guidance of a faculty member.

## BUILD COMMUNITY AND NETWORKS

The Dietetics and Nutrition Club (DNC) (<https://nutrisci.wisc.edu/undergraduate/dietetics-and-nutrition-club/>) is a registered student organization open to undergraduate and graduate students. The club offers a variety of opportunities for members to engage in networking events, participate in volunteer and community outreach opportunities, and learn about the field of nutrition and the dietetics profession.

## CUSTOMIZE A PATH OF STUDY

With nearly 20 elective courses available in the third and fourth years of the program, students can plan their coursework to best fit their professional goals and explore scientific principles of greatest interest to them.

Students may participate in the college's Research in Honors program (<https://cals.wisc.edu/academics/undergraduate-students/outside-the-classroom/honors-program/honors-in-research/>). Many students enhance their major by participating in a certificate program such as the Biology Core Curriculum Honors (Biocore) Certificate (<https://guide.wisc.edu/undergraduate/letters-science/biology-core-curriculum/biology-core-curriculum-honors-certificate/>).

## MAKE A STRONG START

A popular First-Year Interest Group (FIG) focuses on issues of food and identity and covers current events, nutrition policies related to chronic disease, and community-led programs to improve health outcomes.

## GAIN GLOBAL PERSPECTIVE

Several courses emphasize global health and world nutrition. Many students pair a major in Nutritional Sciences with the Global Health Certificate, which includes a field experience/internship focused on a health-related topic of global importance. Students can explore studying abroad as a Nutritional Sciences major by utilizing the Nutritional Sciences Major Advising Page. Students work with their advisor and the CALS study abroad office to identify appropriate programs.

## HOW TO GET IN

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To declare this major, students must be admitted to UW-Madison and the College of Agricultural and Life Sciences (CALS). For information about becoming a CALS first-year or transfer student, see Entering the College (<http://guide.wisc.edu/undergraduate/agricultural-life-sciences/#enteringthecollegertext>).

Students who attend Student Orientation, Advising, and Registration (SOAR) with the College of Agricultural and Life Sciences have the option to declare this major at SOAR. Students may otherwise declare after they have begun their undergraduate studies. For more information, contact the advisor listed in the Contact Box for the major.

## REQUIREMENTS

### UNIVERSITY GENERAL EDUCATION REQUIREMENTS

All undergraduate students at the University of Wisconsin-Madison are required to fulfill a minimum set of common university general education requirements to ensure that every graduate acquires the essential core of an undergraduate education. This core establishes a foundation for living a productive life, being a citizen of the world, appreciating aesthetic values, and engaging in lifelong learning in a continually changing world. Various schools and colleges will have requirements in addition to the requirements listed below. Consult your advisor for assistance, as needed. For additional information, see the university Undergraduate General Education Requirements (<http://guide.wisc.edu/undergraduate/#requirementsforundergraduatetext>) section of the *Guide*.

General Education	• Breadth—Humanities/Literature/Arts: 6 credits
	• Breadth—Natural Science: 4 to 6 credits, consisting of one 4- or 5-credit course with a laboratory component; or two courses providing a total of 6 credits
	• Breadth—Social Studies: 3 credits
	• Communication Part A & Part B *
	• Ethnic Studies *
	• Quantitative Reasoning Part A & Part B *

\* The mortarboard symbol appears before the title of any course that fulfills one of the Communication Part A or Part B, Ethnic Studies, or Quantitative Reasoning Part A or Part B requirements.

## COLLEGE OF AGRICULTURAL AND LIFE SCIENCES REQUIREMENTS

In addition to the University General Education Requirements, all undergraduate students in CALS must satisfy a set of college and major requirements. Courses may not double count within university requirements (General Education and Breadth) or within college requirements (First-Year Seminar, International Studies, Science, and Capstone), but courses counted toward university requirements may also be used to satisfy a college and/or a major requirement; similarly, courses counted toward college requirements may also be used to satisfy a university and/or a major requirement.

## COLLEGE REQUIREMENTS FOR ALL CALS BS DEGREE PROGRAMS

Code	Title	Credits
	Quality of Work: Students must maintain a minimum cumulative grade point average of 2.000 to remain in good standing and be eligible for graduation.	
	Residency: Students must complete 30 degree credits in residence at UW–Madison after earning 86 credits toward their undergraduate degree.	
	First year seminar ( <a href="http://guide.wisc.edu/undergraduate/agricultural-life-sciences/#CALSThirdYearSeminarCourses">http://guide.wisc.edu/undergraduate/agricultural-life-sciences/#CALSThirdYearSeminarCourses</a> )	1
	International studies ( <a href="http://guide.wisc.edu/undergraduate/agricultural-life-sciences/#CALSIInternationalStudiesCourses">http://guide.wisc.edu/undergraduate/agricultural-life-sciences/#CALSIInternationalStudiesCourses</a> )	3
	Physical science fundamentals	4-5
CHEM 103	General Chemistry I	
or CHEM 108	Chemistry in Our World	
or CHEM 109	Advanced General Chemistry	
	Biological science	5
	Additional science (biological, physical, or natural)	3
	Science breadth (biological, physical, natural, or social)	3
	CALS Capstone Learning Experience: included in the requirements for each CALS major (see "major requirements") ( <a href="http://guide.wisc.edu/undergraduate/agricultural-life-sciences/#CALSCapstoneRequirement">http://guide.wisc.edu/undergraduate/agricultural-life-sciences/#CALSCapstoneRequirement</a> )	

## MAJOR REQUIREMENTS

Code	Title	Credits
<b>Mathematics and Statistics</b>		
Complete one of the following (or may be satisfied by placement exam):		5-6
MATH 112 & MATH 113	Algebra and Trigonometry	
MATH 114	Algebra and Trigonometry	
MATH 171	Calculus with Algebra and Trigonometry I <sup>1</sup>	
Complete one of the following:		3-5
STAT 301	Introduction to Statistical Methods	
STAT 371	Introductory Applied Statistics for the Life Sciences	
<b>Chemistry</b>		
Complete one of the following:		5-9
CHEM 103 & CHEM 104	General Chemistry I and General Chemistry II	
CHEM 109	Advanced General Chemistry	
<b>Organic Chemistry</b>		
CHEM 343	Organic Chemistry I	3
CHEM 344	Introductory Organic Chemistry Laboratory	2
CHEM 345	Organic Chemistry II	3
<b>Introductory Biology</b>		
Complete one of the following options:		10
Option 1:		
BOTANY/ BIOLOGY 130	General Botany	
ZOOLOGY/ BIOLOGY 101	Animal Biology	
ZOOLOGY/ BIOLOGY 102	Animal Biology Laboratory	
Option 2:		
BIOLOGY/ BOTANY/ ZOOLOGY 151	Introductory Biology	
BIOLOGY/ BOTANY/ ZOOLOGY 152	Introductory Biology	
Option 3:		
BIOCORE 381	Evolution, Ecology, and Genetics	
BIOCORE 382	Evolution, Ecology, and Genetics Laboratory	
BIOCORE 383	Cellular Biology	
BIOCORE 384	Cellular Biology Laboratory	
<b>Nutritional Sciences Biology</b>		
Complete one of the following options:		8-13
Option 1:		
ANAT&PHY 335	Physiology	
GENETICS 466	Principles of Genetics	
And select one of the following: <sup>2</sup>		

MICROBIO 101 & MICROBIO 102	General Microbiology and General Microbiology Laboratory	
MICROBIO 303 & MICROBIO 304	Biology of Microorganisms and Biology of Microorganisms Laboratory	

Option 2: <sup>3</sup>

BIOCORE 485	Principles of Physiology	
BIOCORE 486	Principles of Physiology Laboratory	
BIOCORE 587	Biological Interactions	

**Physics**

Complete one of the following: 8-10

PHYSICS 103 & PHYSICS 104	General Physics and General Physics	
PHYSICS 201 & PHYSICS 202	General Physics and General Physics	
PHYSICS 207 & PHYSICS 208	General Physics and General Physics	

**Core**

NUTR SCI/AN SCI/ DY SCI 311	Comparative Animal Nutrition	3
or NUTR SCI 332	Human Nutritional Needs	
NUTR SCI 431	Nutrition in the Life Span	3
BIOCHEM/NUTR SCI 510	Nutritional Biochemistry and Metabolism	3

Select one of the following: 3-7

BIOCHEM 501	Introduction to Biochemistry	
BIOCHEM 507 & BIOCHEM 508	General Biochemistry I and General Biochemistry II	

**Electives within the Major**

Complete 6 credits from the following: 6

A A E/ AGRONOMY/ NUTR SCI 350	World Hunger and Malnutrition	
ANAT&PHY 337	Human Anatomy	
ANAT&PHY 338	Human Anatomy Laboratory	
ANTHRO 365	Medical Anthropology	
BIOCHEM/ NUTR SCI 560	Principles of Human Disease and Biotechnology	
BIOCHEM/ M M & I 575	Biology of Viruses <sup>4</sup>	
BIOCHEM/ NUTR SCI 645	Molecular Control of Metabolism and Metabolic Disease <sup>5</sup>	
C&E SOC/ SOC 533	Public Health in Rural & Urban Communities	
CHEM 311	Chemistry Across the Periodic Table	
CHEM 327	Fundamentals of Analytical Science	
CHEM 329	Fundamentals of Analytical Science	
DY SCI 378	Lactation Physiology	
FOOD SCI/ AN SCI 321	Food Laws and Regulations	
FOOD SCI/ MICROBIO 325	Food Microbiology	
GENETICS 545	Genetics Laboratory	

HORT/ AGRONOMY 338	Plant Breeding and Biotechnology	
HORT/ AGRONOMY/ BOTANY 339	Plant Biotechnology: Principles and Techniques I	
HORT/ AGRONOMY 360	Genetically Modified Crops: Science, Regulation & Controversy	
MED HIST/ PHILOS 515	Public Health Ethics	
MED HIST/ PHILOS 558	Ethical Issues in Health Care	
M M & I/PATH- BIO 528	Immunology	
NUTR SCI 375	Special Topics	
NUTR SCI 377	Cultural Aspects of Food and Nutrition	
NUTR SCI/INTER- AG 421	Global Health Field Experience	
NUTR SCI/ KINES 525	Nutrition in Physical Activity and Health	
NUTR SCI 500	Undergraduate Capstone Seminar Laboratory	
NUTR SCI 540	Community Nutrition and Health Equity	
NUTR SCI/ BIOCHEM 619	Advanced Nutrition: Intermediary Metabolism of Macronutrients <sup>4</sup>	
NUTR SCI/ POP HLTH 621	Introduction to Nutritional Epidemiology <sup>4</sup>	
NUTR SCI 623	Advanced Nutrition: Minerals <sup>4</sup>	
NUTR SCI 625	Advanced Nutrition: Obesity and Diabetes <sup>4</sup>	
NUTR SCI/ AN SCI 626	Experimental Diet Design <sup>4</sup>	
NUTR SCI 627	Advanced Nutrition: Vitamins <sup>4</sup>	
NUTR SCI 631	Clinical Nutrition I	
NUTR SCI 681	Senior Honors Thesis <sup>5</sup>	
NUTR SCI 682	Senior Honors Thesis <sup>5</sup>	
NUTR SCI 691	Senior Thesis-Nutrition <sup>5</sup>	
NUTR SCI 692	Senior Thesis <sup>5</sup>	
NUTR SCI 699	Special Problems <sup>6</sup>	
ONCOLOGY 401	Introduction to Experimental Oncology	
PATH 404	Pathophysiologic Principles of Human Diseases	
POP HLTH/ C&E SOC 370	Introduction to Public Health	
ZOOLOGY 470	Introduction to Animal Development	
ZOOLOGY 570	Cell Biology	

**Capstone**

Complete one of the following: 1-8

NUTR SCI 500	Undergraduate Capstone Seminar Laboratory	
NUTR SCI 681 & NUTR SCI 682	Senior Honors Thesis and Senior Honors Thesis	
NUTR SCI 691 & NUTR SCI 692	Senior Thesis-Nutrition and Senior Thesis	

NUTR SCI 699	Special Problems <sup>7</sup>	
<b>Total Credits</b>		<b>66-91</b>

<sup>1</sup> If MATH 171 Calculus with Algebra and Trigonometry I is taken, students must take MATH 217 Calculus with Algebra and Trigonometry II.

<sup>2</sup> Consult advisor about combining MICROBIO 303 with MICROBIO 102.

<sup>3</sup> If the Biocore sequence is taken to fulfill the first biology requirement, it must be taken to fulfill the second biology requirement.

<sup>4</sup> These courses are taught primarily to graduate students. Permission to enroll from instructor may be required.

<sup>5</sup> Note that for NUTR SCI 681/NUTR SCI 682 (Senior Honors Thesis) and NUTR SCI 691/NUTR SCI 692 (Senior Thesis), both courses in the sequence must be completed in order to earn a grade.

<sup>6</sup> May count up to 6 credits of NUTR SCI 699 Special Problems towards the electives requirement.

<sup>7</sup> Consult advisor regarding the possibility of completing NUTR SCI 699 Special Problems for capstone.

## RECOMMENDED NUTRITIONAL SCIENCE ELECTIVES

Code	Title	Credits
ANTHRO 365	Medical Anthropology	3
BIOCHEM/ NUTR SCI 560	Principles of Human Disease and Biotechnology	2
BIOCHEM/ M M & I 575	Biology of Viruses	2
BIOCHEM/ NUTR SCI 645	Molecular Control of Metabolism and Metabolic Disease	3
C&E SOC/SOC 533	Public Health in Rural & Urban Communities	3
CHEM 311	Chemistry Across the Periodic Table	4
CHEM 327	Fundamentals of Analytical Science	4
CHEM 329	Fundamentals of Analytical Science	4
AN SCI/ FOOD SCI 305	Introduction to Meat Science and Technology	4
FOOD SCI/ AN SCI 321	Food Laws and Regulations	1
FOOD SCI/ MICROBIO 325	Food Microbiology	3
GENETICS 545	Genetics Laboratory	2
HORT/ AGRONOMY 338	Plant Breeding and Biotechnology	3
HORT/ AGRONOMY 360	Genetically Modified Crops: Science, Regulation & Controversy	2
ANAT&PHY 337	Human Anatomy	3
ANAT&PHY 338	Human Anatomy Laboratory	2
MED HIST/ PHILOS 515	Public Health Ethics	3
MED HIST/ PHILOS 558	Ethical Issues in Health Care	3
M M & I/PATH- BIO 528	Immunology	3
NUTR SCI/A A E/ AGRONOMY 350	World Hunger and Malnutrition	3
NUTR SCI 375	Special Topics	1-4

NUTR SCI 377	Cultural Aspects of Food and Nutrition	3
NUTR SCI/INTER- AG 421	Global Health Field Experience	1-4
NUTR SCI 500	Undergraduate Capstone Seminar Laboratory	1
NUTR SCI/ KINES 525	Nutrition in Physical Activity and Health	3
NUTR SCI 540	Community Nutrition and Health Equity	3
ONCOLOGY 401	Introduction to Experimental Oncology	2
PATH 404	Pathophysiologic Principles of Human Diseases	3
POP HLTH/ C&E SOC 370	Introduction to Public Health	3
ZOOLOGY 470	Introduction to Animal Development	3
ZOOLOGY 570	Cell Biology	3

## UNIVERSITY DEGREE REQUIREMENTS

**Total Degree** To receive a bachelor's degree from UW-Madison, students must earn a minimum of 120 degree credits. The requirements for some programs may exceed 120 degree credits. Students should consult with their college or department advisor for information on specific credit requirements.

**Residency** Degree candidates are required to earn a minimum of 30 credits in residence at UW-Madison. "In residence" means on the UW-Madison campus with an undergraduate degree classification. "In residence" credit also includes UW-Madison courses offered in distance or online formats and credits earned in UW-Madison Study Abroad/Study Away programs.

**Quality of Work** Undergraduate students must maintain the minimum grade point average specified by the school, college, or academic program to remain in good academic standing. Students whose academic performance drops below these minimum thresholds will be placed on academic probation.

## LEARNING OUTCOMES

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1. Obtains and can articulate specialized knowledge in the field of nutritional sciences and dietetics along with an education broad enough to meet the challenges of future careers and opportunities.
2. Obtains and can articulate foundational knowledge in areas relevant to the field of nutrition and dietetics.
3. Communicates complex ideas in a clear and understandable manner through both written and oral presentations.
4. Demonstrates quantitative literacy in math and statistics relevant to nutritional sciences and dietetics.
5. Demonstrates the ability to think critically and creatively, to synthesize, analyze, and integrate ideas for decision making and problem solving.

- Develops the skills for life-long learning and is capable of locating, interpreting, and critically evaluating professional literature and current research.
- Develops a global perspective and an appreciation for the interdependencies among individuals and their workplaces, communities, environments, and world; and an understanding of the interrelationships between science and society.
- Develops a respect for truth, a tolerance for diverse views, and a strong sense of personal and professional ethics.

## FOUR-YEAR PLAN

### FOUR-YEAR PLAN SAMPLE NUTRITIONAL SCIENCES FOUR-YEAR PLAN

Students must complete at least 120 total credits to be eligible for graduation.

#### First Year

Fall	Credits Spring	Credits
CHEM 103 or 109 <sup>1</sup>	4-5 CHEM 104 <sup>1</sup>	5
MATH 113 (if needed) <sup>2</sup>	3 Social Sciences	3-4
COMM A	3 Ethnic Studies	3
CALS First Year Seminar	1 Elective	3
Electives	3-4	
<b>14-16</b>		<b>14-15</b>

#### Second Year

Fall	Credits Spring	Credits
CHEM 343	3 NUTR SCI 332	3
STAT 301 or 371	3 CHEM 345	3
BIOLOGY/BOTANY/ ZOOLOGY 151 <sup>3</sup>	5 BIOLOGY/BOTANY/ ZOOLOGY 152 <sup>3</sup>	5
CALS International Studies	3 Humanities	3-4
<b>14</b>		<b>14-15</b>

#### Third Year

Fall	Credits Spring	Credits
BIOCHEM 501 or 507 (if taking BIOCHEM 507, take BIOCHEM 508 in Spring)	3 NUTR SCI 431	3
CHEM 344	2 MICROBIO 101 or 303	3
ANAT&PHY 335	5 MICROBIO 102 or 304	2
Humanities	3 Nutritional Sciences Elective <sup>5</sup>	3-4
Elective	3 Electives	3-4
<b>16</b>		<b>14-16</b>

#### Fourth Year

Fall	Credits Spring	Credits
GENETICS 466 <sup>4</sup>	3 NUTR SCI 500	1
NUTR SCI/ BIOCHEM 510	3 PHYSICS 104	4
PHYSICS 103	4 Nutritional Sciences Electives <sup>5</sup>	3-6

Electives	6 Electives	6
<b>16</b>		<b>14-17</b>

#### Total Credits 116-125

- In order to take CHEM 103/CHEM 104 or CHEM 109, students must have a suitable math placement score or completion of MATH 112, MATH 114, MATH 171, or equivalent.
- MATH course dependent on placement score and transfer credit evaluation.
- BIOLOGY/BOTANY/ZOOLOGY 151 & BIOLOGY/BOTANY/ZOOLOGY 152 fulfills the COMM B requirement.
- BIOCORE 381/BIOCORE 382, BIOCORE 383/BIOCORE 384, BIOCORE 485/BIOCORE 486, BIOCORE 587 also accepted.
- Select 6 credits from major elective options.

## ADVISING AND CAREERS

### ADVISING AND CAREERS

Students are assigned a professional advisor who assists them with building their personalized Wisconsin Experience – including a strong curriculum to match student interests – and provides advising on career paths including graduate school or pursuing advanced degrees in the health sciences.

Professors provide mentorship to students in the program through work on faculty-led research, including learning research paper- and grant-writing skills, communicating about scientific concepts, and presenting research results to different audiences.

### CAREER OPPORTUNITIES

Graduates of the program are working as physicians, scientists, physician assistants, nutrition product developers, food service directors, nutrition educators, wellness directors, and professors; and have a wide range of employers, including hospitals, clinics, nursing homes, school districts, food companies, universities, grocery stores, and non-profit organizations.

Alumni are recognized for their skills in healthcare, leadership, clinical research, communication, critical thinking, and problem-solving.

## PEOPLE

### PEOPLE PROFESSORS

Richard Eisenstein  
Guy Groblewski  
Adam Kuchnia (Director of Didactic Program in Dietetics)  
HuiChuan Lai  
James Ntambi  
Beth Olson  
Brian Parks  
Joseph Pierre  
Sherry Tanumihardjo  
Eric Yen

### INSTRUCTORS

Stavroula Antonopoulos

Amber Haroldson  
Tara LaRowe (Coordinator of Didactic Program in Dietetics)  
Makayla Schuchardt

## ACADEMIC ADVISORS

Sarah Golla, MSW  
Mona Mogahed, MPS

## WISCONSIN EXPERIENCE

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#### RESEARCH EXPERIENCE

Undergraduate students have the opportunity to take for-credit and not-for-credit hours in labs (<https://nutrisci.wisc.edu/undergraduate/student-research/>) to participate in research and learn additional lab skills. Faculty-led research programs inform the scientific understanding of nutrition's role in health. Students can work with internationally recognized researchers who study metabolism, genetics, genomics, physiology, and nutritional management of diseases including phenylketonuria (PKU), cystic fibrosis, and diabetes.

#### GLOBAL ENGAGEMENT

Faculty and students in the program have many connections with global activities. The UW Mobile Clinic and Health Care in Uganda (<https://studyabroad.wisc.edu/program/?programId=532>) study abroad program provides students an opportunity to visit Uganda and learn about nutrition and public health. The Village Health Project (<https://www.villagehealthproject.org/>) student organization grew out of students traveling to Uganda on UW-Madison programs and supports ongoing public health projects in the region.

#### STUDENT ORGANIZATIONS

The Dietetics and Nutrition Club (DNC) (<https://nutrisci.wisc.edu/undergraduate/dietetics-and-nutrition-club/>), open to undergraduate and graduate students, hosts biweekly evening meetings featuring speakers on many topics related to nutrition. The group also assists students in finding volunteer and job opportunities in the field of nutrition.

#### VOLUNTEER ACTIVITIES

Students volunteer through many different programs in the community. Examples include:

- Volunteering at UW Hospitals and Clinics or other local hospitals to gain experience in patient care
- Joining the student organization Slow Food UW, a group that hosts dinners in the Madison community
- Addressing food insecurity through student groups including Food Justice Collective, Campus Food Shed, UW Frozen Meals program, Open Seat food pantry, Food Recovery Network-Madison Chapter, F.H. King: Students for Sustainable Agriculture; and Madison-area food pantries such as Madison Community Fridges

The Dietetics and Nutrition Club also offers volunteer opportunities.

#### INTERNSHIPS

Students may obtain academic credit along with community-based engagement by creating their own internship under the supervision of a faculty member.

## RESOURCES AND SCHOLARSHIPS

### RESOURCES AND SCHOLARSHIPS

The Department of Nutritional Sciences awards tens of thousands of dollars in scholarship funds (<https://nutrisci.wisc.edu/undergraduate/scholarships/>) for students each year and Nutritional Sciences students are also eligible for scholarships in the College of Agricultural and Life Sciences.

Students in the College of Agricultural and Life Sciences receive more than \$1.25 million in scholarships annually. Learn more about college scholarships. (<https://cals.wisc.edu/academics/undergraduate-students/financing-your-education/cals-scholarships/>)