NUTRITIONAL SCIENCES, B.S.

The bachelor of science with a major in nutritional science builds on a core set of nutrition courses with additional courses emphasizing the chemistry and biology of nutrients from the molecular to the systemic level. Students in this program often pursue graduate study in medicine, nutritional sciences, and other biological sciences. Graduates also find employment in agribusiness, the food industry, government agencies, health fields, and human services. Others may pursue advanced degrees in nutrition, the health and social sciences, and international studies. Students concerned with food and nutrition problems of developing countries can also enroll in courses that treat the agricultural, environmental, economic, and social context of such problems with the nutrition core.

HOW TO GET IN

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/#enteringthecollegetext).

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 under the Advising and Careers tab.

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/#requirementstext) section of the Guide.

Requirements Detail

<table>
<thead>
<tr>
<th>General Education</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Breadth—Humanities/Literature/Arts: 6 credits</td>
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</tr>
<tr>
<td>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</td>
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</tr>
<tr>
<td>Breadth—Social Studies: 3 credits</td>
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<tr>
<td>Communication Part A &amp; Part B *</td>
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</tr>
<tr>
<td>Ethnic Studies *</td>
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</tr>
<tr>
<td>Quantitative Reasoning Part A &amp; Part B *</td>
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</table>

* 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. Specific requirements for all majors in the college and other information on academic matters can be obtained from the Office of Academic Affairs (http://www.cals.wisc.edu/academics), College of Agricultural and Life Sciences, 116 Agricultural Hall, 1450 Linden Drive, Madison, WI 53706; 608-262-3003. Academic departments and advisors also have information on requirements. Courses may not double count within university requirements (General Education and Breadth) or within college requirements (First-Year Seminar, International Studies and Science), 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 B.S. DEGREE PROGRAMS

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 103</td>
<td>General Chemistry I</td>
<td>4-5</td>
</tr>
<tr>
<td>or CHEM 108</td>
<td>Chemistry in Our World</td>
<td></td>
</tr>
<tr>
<td>or CHEM 109</td>
<td>Advanced General Chemistry</td>
<td></td>
</tr>
<tr>
<td>Biological Science</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Additional Science (Biological, Physical, or Natural)</td>
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<td></td>
</tr>
<tr>
<td>Science Breadth (Biological, Physical, Natural, or Social)</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>
CALS Capstone Learning Experience: included in the requirements for each CALS major (see "Major Requirements") (http://guide.wisc.edu/undergraduate/agricultural-life-sciences/#requirementstext)

### MAJOR REQUIREMENTS

<table>
<thead>
<tr>
<th>Code</th>
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<th>Credits</th>
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<tbody>
<tr>
<td></td>
<td><strong>Mathematics and Statistics</strong></td>
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<tr>
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<td>Select one of the following (or may be satisfied by placement exam):</td>
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<tr>
<td>MATH 112</td>
<td>Algebra and Trigonometry</td>
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</tr>
<tr>
<td>MATH 113</td>
<td>Algebra</td>
<td></td>
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<tr>
<td>MATH 114</td>
<td>Algebra and Trigonometry</td>
<td></td>
</tr>
<tr>
<td>MATH 171</td>
<td>Calculus with Algebra and Trigonometry I(^1)</td>
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<td>Select one of the following:</td>
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<tr>
<td>MATH 210</td>
<td>Topics in Finite Mathematics</td>
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<tr>
<td>MATH 211</td>
<td>Calculus</td>
<td></td>
</tr>
<tr>
<td>MATH 217</td>
<td>Calculus with Algebra and Trigonometry II</td>
<td></td>
</tr>
<tr>
<td>MATH 221</td>
<td>Calculus and Analytic Geometry I</td>
<td></td>
</tr>
<tr>
<td>MATH 222</td>
<td>Calculus and Analytic Geometry II</td>
<td></td>
</tr>
<tr>
<td>STAT 224</td>
<td>Introductory Statistics for Engineers</td>
<td></td>
</tr>
<tr>
<td>STAT 301</td>
<td>Introduction to Statistical Methods</td>
<td></td>
</tr>
<tr>
<td>STAT 371</td>
<td>Introductory Applied Statistics for the Life Sciences</td>
<td></td>
</tr>
<tr>
<td>STAT/B M I 541</td>
<td>Introduction to Biostatistics</td>
<td></td>
</tr>
<tr>
<td>STAT/F&amp;W ECOL/HORT 571</td>
<td>Statistical Methods for Biosciences I</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Chemistry</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Select one of the following:</td>
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</tr>
<tr>
<td>CHEM 103</td>
<td>General Chemistry I</td>
<td></td>
</tr>
<tr>
<td>&amp; CHEM 104</td>
<td>and General Chemistry II</td>
<td></td>
</tr>
<tr>
<td>CHEM 109</td>
<td>Advanced General Chemistry</td>
<td></td>
</tr>
<tr>
<td>CHEM 343</td>
<td>Introductory Organic Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 344</td>
<td>Introductory Organic Chemistry Laboratory</td>
<td>2</td>
</tr>
<tr>
<td>CHEM 345</td>
<td>Intermediate Organic Chemistry</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Introductory Biology</strong></td>
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</tr>
<tr>
<td></td>
<td>Select one of the following options:</td>
<td>10</td>
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<tr>
<td></td>
<td>Option 1:</td>
<td></td>
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<tr>
<td>BOTANY/</td>
<td>General Botany</td>
<td></td>
</tr>
<tr>
<td>BIOLOGY 130</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ZOOLOGY/</td>
<td>Animal Biology</td>
<td></td>
</tr>
<tr>
<td>BIOLOGY 101</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ZOOLOGY/</td>
<td>Animal Biology Laboratory</td>
<td></td>
</tr>
<tr>
<td>BIOLOGY 102</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Option 2:</td>
<td></td>
</tr>
<tr>
<td>BIOLOGY/</td>
<td>Introductory Biology</td>
<td></td>
</tr>
<tr>
<td>BOTANY/</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ZOOLOGY 151</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIOLOGY/</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BOTANY/</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ZOOLOGY 152</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Option 3:</td>
<td></td>
</tr>
<tr>
<td>BIOCORE 381</td>
<td>Evolution, Ecology, and Genetics</td>
<td></td>
</tr>
<tr>
<td>BIOCORE 382</td>
<td>Evolution, Ecology, and Genetics Laboratory</td>
<td></td>
</tr>
<tr>
<td>BIOCORE 383</td>
<td>Cellular Biology</td>
<td></td>
</tr>
<tr>
<td>BIOCORE 384</td>
<td>Cellular Biology Laboratory</td>
<td></td>
</tr>
</tbody>
</table>

### Nutritional Sciences Biology

Select one of the following options: 8-13

**Option 1:**
- PHYSIOL 335 | Physiology
- GENETICS 466 | Principles of Genetics
And select one of the following: 2
- MICROBIO 101 | General Microbiology
& MICROBIO 102 | and General Microbiology Laboratory
- MICROBIO 303 | Biology of Microorganisms
& MICROBIO 304 | and Biology of Microorganisms Laboratory

**Option 2:** 3
- BIOCORE 485 | Organismal Biology
- BIOCORE 486 | Organismal Biology Laboratory
- BIOCORE 587 | Biological Interactions

### Physics

Select one of the following: 8-10
- PHYSICS 103 | General Physics
& PHYSICS 104 | and General Physics
- PHYSICS 201 | General Physics
& PHYSICS 202 | and General Physics
- PHYSICS 207 | General Physics
& PHYSICS 208 | 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 | Biochemical Principles of Human and Animal Nutrition 3

Select one of the following: 3-7
- BIOCHEM 501 | Introduction to Biochemistry
- BIOCHEM 507 | General Biochemistry I
& BIOCHEM 508 | and General Biochemistry II
- BMOLCHEM 503 | Human Biochemistry

### Electives within the Major

Select 6 credits from the following: 6
- A A E/AGRONOMY/INTER-AG/NUTR SCI 350 | World Hunger and Malnutrition
- BIOCHEM 550 | Topics in Medical Biochemistry
- BMOLCHEM 504 | Human Biochemistry Laboratory
- CHEM 311 | Chemistry Across the Periodic Table
- CHEM 327 | Fundamentals of Analytical Science
- CHEM 329 | Fundamentals of Analytical Science
- FOOD SCI/AN SCI 321 | Food Laws and Regulations
### Nutritional Sciences, B.S.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOOD SCI/MICROBIO 325</td>
<td>Food Microbiology</td>
<td></td>
</tr>
<tr>
<td>NUTR SCI/AGRONOMY/ENTOM 203</td>
<td>Introduction to Global Health</td>
<td></td>
</tr>
<tr>
<td>NUTR SCI 500</td>
<td>Undergraduate Capstone Seminar Laboratory</td>
<td></td>
</tr>
<tr>
<td>NUTR SCI/KINES 525</td>
<td>Nutrition in Physical Activity and Health</td>
<td></td>
</tr>
<tr>
<td>NUTR SCI 540</td>
<td>Community Nutrition Programs and Policy Issues</td>
<td></td>
</tr>
<tr>
<td>NUTR SCI 631</td>
<td>Clinical Nutrition</td>
<td></td>
</tr>
<tr>
<td>NUTR SCI/PHM PRAC 672</td>
<td>Herbals, Homeopathy, and Dietary Supplements</td>
<td></td>
</tr>
<tr>
<td>NUTR SCI 681</td>
<td>Senior Honors Thesis</td>
<td></td>
</tr>
<tr>
<td>NUTR SCI 682</td>
<td>Senior Honors Thesis</td>
<td></td>
</tr>
<tr>
<td>NUTR SCI 691</td>
<td>Senior Thesis-Nutrition</td>
<td></td>
</tr>
<tr>
<td>NUTR SCI 692</td>
<td>Senior Thesis</td>
<td></td>
</tr>
<tr>
<td>NUTR SCI 699</td>
<td>Special Problems</td>
<td></td>
</tr>
<tr>
<td>PHYSIOL 533</td>
<td>Molecular Physiology</td>
<td></td>
</tr>
</tbody>
</table>

#### Capstone

Select one of the following: 1-8

- NUTR SCI 499 Capstone in Nutrition
- NUTR SCI 500 Undergraduate Capstone Seminar Laboratory
- NUTR SCI 681 & NUTR SCI 682 Senior Honors Thesis
- NUTR SCI 691 & NUTR SCI 692 Senior Thesis-Nutrition
- NUTR SCI 699 Special Problems

**Total Credits: 66-91**

1. If MATH 171 Calculus with Algebra and Trigonometry I is taken, students must take MATH 217 Calculus with Algebra and Trigonometry II.
2. Consult advisor about combining MICROBIO 303 with MICROBIO 102.
3. If the Biocore sequence is taken to fulfill the first biology requirement, it must be taken to fulfill the second biology requirement.
4. 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.
5. Consult advisor regarding the possibility of completing NUTR SCI 699 Special Problems for capstone.

### Recommended Nutritional Science Electives

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANATOMY/KINES 328</td>
<td>Human Anatomy</td>
<td>3</td>
</tr>
<tr>
<td>BIOCHEM 550</td>
<td>Topics in Medical Biochemistry</td>
<td>2</td>
</tr>
<tr>
<td>C&amp;E SOC/SOC 222</td>
<td>Food, Culture, and Society</td>
<td>3</td>
</tr>
<tr>
<td>FOOD SCI/MICROBIO 324</td>
<td>Food Microbiology Laboratory</td>
<td>2</td>
</tr>
<tr>
<td>FOOD SCI/MICROBIO 325</td>
<td>Food Microbiology</td>
<td>3</td>
</tr>
<tr>
<td>FOOD SCI 410</td>
<td>Food Chemistry</td>
<td>3</td>
</tr>
</tbody>
</table>

### Honors in the Major

To earn Honors in the Major, students are required to take at least 20 honors credits. In addition, students must take NUTR SCI 681 Senior Honors Thesis and NUTR SCI 682 Senior Honors Thesis when completing their thesis project; please see the Honors in Major Checklist (http://www.cals.wisc.edu/academics/undergraduate-programs/get-involved/honors-program/honors-in-the-major) for more information.

### University Degree Requirements

**Requirements Detail**

- **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

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.
6. Develops the skills for life-long learning and is capable of locating, interpreting, and critically evaluating professional literature and current research.
7. 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.
8. Develops a respect for truth, a tolerance for diverse views, and a strong sense of personal and professional ethics.

FOUR-YEAR PLAN

SAMPLE NUTRITIONAL SCIENCES FOUR-YEAR PLAN

Junior

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>BIOCHEM 501 or 507 (if taking BIOCHEM 507, take BIOCHEM 508 in spring)</td>
<td>3</td>
<td>PHYSICS 104, 202, or 208</td>
<td>4</td>
</tr>
<tr>
<td>PHYSICS 103, 201, or 207</td>
<td>4-5</td>
<td>NUTR SCI 431</td>
<td>3</td>
</tr>
<tr>
<td>Electives ^2</td>
<td>9</td>
<td>MICROBIO 101 or 303 ^3</td>
<td>3</td>
</tr>
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<td></td>
<td></td>
<td>MICROBIO 102 or 304 ^3</td>
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<td></td>
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<td>Elective ^2</td>
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<tr>
<td></td>
<td>16-17</td>
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<td>15</td>
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Senior

<table>
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<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>GENETICS 466 ^3</td>
<td>3</td>
<td>Capstone Experience</td>
<td>1-3</td>
</tr>
<tr>
<td>NUTR SCI/ BIOCHEM 510</td>
<td>3</td>
<td>CHEM 327, 329, or 311</td>
<td>4</td>
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<tr>
<td>NUTR SCI Elective ^5</td>
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<td>Electives ^2</td>
<td>9</td>
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<td>15</td>
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<td>14-16</td>
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<tr>
<td>Total Credits</td>
<td>29-31</td>
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</table>

1. CHEM 103/CHEM 104 or CHEM 109 is required.
2. UW and CALS general education requirements are listed on the Requirements tab. Other recommended electives: Math (http://guide.wisc.edu/courses/math) through MATH 222 (second semester calculus), CHEM 561 Physical Chemistry, and foreign language.
3. BIOCORE 381/BIOCORE 382, BIOCORE 383/BIOCORE 384, BIOCORE 485/BIOCORE 486, BIOCORE 587 also accepted.
4. ANTHRO 104 fulfills both the Ethnic Studies and International Studies requirements.
5. Select 3 credits from NUTR SCI/A E/AGRONOMY/INTER-AG 350, NUTR SCI 540, NUTR SCI 631, NUTR SCI/PHM PRAC 672, NUTR SCI 681, NUTR SCI 682, NUTR SCI 691, NUTR SCI 692, NUTR SCI 699, FOOD SCI/MICROBIO 325, FOOD SCI 410, FOOD SCI 412 or FOOD SCI 514.

ADVISING AND CAREERS

Prospective and declared students should contact the student services coordinator with questions.

Students in this program often pursue graduate study in medicine, nutritional sciences, and other biological sciences. Graduates also find employment in agribusiness, the food industry, government agencies, health fields, and human services. Others may pursue advanced degrees in nutrition, the health and social sciences, and international studies.
PEOPLE

PROFESSORS
Eide (chair), Eisenstein, Groblewski, Lai, Ney, Ntambi, Smith, Sunde, Tanumihardjo

ASSOCIATE PROFESSOR
Olson

ASSISTANT PROFESSORS
Parks, Yen

DISTINGUISHED FACULTY ASSOCIATE
Karls

FACULTY ASSOCIATE
Thurlow

ASSISTANT FACULTY ASSOCIATE
Schuchardt

SENIOR LECTURER
Anderson