
Nutrition, Dietetics, and Food Science

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Admission to Degree Program

Some degree programs in the Department of Nutrition, Dietetics, and Food Science carry special enrollment limitations. Please see the department for specific details.

Graduation Requirements

To receive a BYU bachelor's degree a student must complete, in addition to all requirements for a specific major, the following university requirements:

- The university core, consisting of requirements in general and religious education (See the University Core section of this catalog for details. For a complete listing of courses that meet university core requirements, see the current class schedule.)
- A minimum of 30 credit hours in residence
- A minimum of 120 credit hours
- A cumulative GPA of at least 2.0

Undergraduate Programs and Degrees

BS	Dietetics
BS	Food Industry Management
BS	Food Science
BS	Nutritional Science
Minors	Food Science
	Nutrition

Students should see their college advisement center for help or information concerning the undergraduate programs.

Note: For the molecular biology program, see the Microbiology and Molecular Biology section of this catalog.

Graduate Programs and Degrees

MS	Food Science
MS	Nutritional Science

For more information see the BYU 2007–2008 Graduate Catalog.

BS Dietetics (80 hours*)

This is a limited-enrollment program requiring departmental admissions approval. Please see below for information regarding requirements for admission to this major.

Following prerequisite courses, the Didactic Program in Dietetics (DPD) consists primarily of dietetics course work at the junior and senior level. The Brigham Young University Didactic Program in Dietetics is currently granted accreditation status by the Commission on Accreditation for Dietetics Education of the American Dietetic Association, 120 South Riverside Plaza, Suite 2000, Chicago, IL 60606-6995, (312) 899-4876. Following graduation, students must gain acceptance into and complete a dietetic internship (DI) to qualify for the national examination required for Registered Dietitian (RD) status.

Program Acceptance Requirements

1. Students must apply by February 15 for admission into the professional sequence in the fall. Formal acceptance is required to continue with the professional sequence.
2. Enrollment is limited to 40 students.

3. Four of the following eight courses must be completed at the time of application: Acc 200, Chem 285, MMBio 221, NDFS 100, 200, 290; PDBio 220, 305.
4. Major GPA and performance in nutrition, dietetics, and food science courses will be considered. Successful applicants typically have a major GPA greater than 3.0 and nutrition, dietetics, and food science course grades greater than B-.
5. Applicants need at least 300 hours of dietetics-related work and/or volunteer experience.

Major Requirements

1. Complete the following courses (must be completed before professional sequence):
NDFS 100, 200, 250, 251, 290.
2. Complete the following:
Chem 101**, 285***.
****Note:** Or an equivalent general chemistry course from high school or junior college.
*****Note:** Chem 105, 106, 107, 351, 352, 481 sequence is recommended for students interested in medical or dental school or graduate programs in nutrition.
3. Complete one course from the following:
Chem 103
MMBio 222.
4. Complete the following:
Acc 200.
MMBio 221.
PDBio 220, 305.
Psych 111.
Stat 221.
5. Complete the following professional sequence courses (after being admitted into the program):
NDFS 300, 356, 374, 375, 400, 401, 405, 424, 435, 440, 445, 458, 466, 475, 490, 491.
PDBio 365.

Recommended Courses

Bus M 300, 340.
Comms 352
ISys 100, 101.
NDFS 310, 361, 380.

Recommended Minors

The following minors are very complementary to a dietetics major, but any area of interest could be considered:

Business
Communication
Gerontology (See School of Family Life).
International Development
Spanish

*Hours include courses that may fulfill university core requirements.

BS Food Industry Management (65 hours*)

The Discipline

There is an increasing demand for students graduating with a background in both food science and business. The multibillion dollar food industry continues to expand, both domestically and internationally, as a growing percentage of the population depends on food produced and preserved by that industry. Students wishing to focus on the industry's business aspects will find this emphasis to be excellent preparation for immediate employment as well as a stepping stone to a master of business administration (MBA) degree. With the addition of one course, students graduating with this degree can obtain a business minor in management. (Those wishing to pursue advanced degrees

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other than the MBA degree or other professional programs should visit with an advisor before selecting this emphasis.)

Valuable experience is gained through numerous opportunities available in the program, including a required internship in the food industry. Students develop a network of professional contacts through participation in the Food Science Club, professional organizations, and national competitions. Scholarships are available from department, college, university, and professional organizations.

Career Opportunities

Graduates are prepared for employment in commercial and private food companies ranging from small entrepreneurial businesses to large corporations. Opportunities for business-oriented careers abound in such areas as food production management, food company management, food ingredient technical sales, and other management opportunities that require an understanding of technical and scientific issues.

Major Requirements

1. Consult with a faculty advisor prior to finalizing your curriculum plan.
2. Complete the following:
NDFS 100, 191, 250, 251, 350, 355, 361, 362, 462.
3. Complete at least 1 hour of the following:
NDFS 399R.
4. Complete the following:
Acc 200.
Bus M 300, 488, 489.
Chem 105, 285.
Econ 110, 210.
MMBio 221, 222.
Org B 320.
Phscs 105.
Stat 221.
5. Complete one course from the following:
Bus M 371R, 380, 382.

Recommended Courses

Consult with a faculty advisor before selecting:

Engl 316 or M Com 320.
IAS 220.
Math 119.
Mfg 201, 202, 479.
NDFS 200, 450, 464, 465.
PAS 100.
Phscs 106.
TMA 150.

*Hours include courses that may fulfill university core requirements.

BS Food Science (68 hours*)

The Discipline

Food science is the multidisciplinary study of food and the application of knowledge thus gained to developing food products and processes, preserving and storing food, and assuring food safety and quality. Food science addresses the conversion of raw agricultural products into a nutritious, convenient, and economical food supply. Most of the food products available in grocery stores were developed and tested by food scientists. Approved by the Institute of Food Technologists, the principal professional organization of food scientists, the curriculum provides excellent preparation as a premedical, pre dental, or other preprofessional major. With the addition of one course, students graduating with this degree are able to obtain a minor in chemistry.

Valuable experience is gained through numerous opportunities available in the program, including faculty-mentored research, employment within the department, and paid food industry internships. Students also develop a network of professional contacts through participation in the Food Science Club, professional organizations, and national competitions. Scholarships are available from department, college, university, and professional organizations.

Career Opportunities

Exciting careers are found in such areas as developing new foods, ensuring food safety and quality, or researching ways to better preserve and store food. Salaries are highly competitive. Typically there are not enough graduates for the unique and challenging opportunities available in the worldwide, multibillion dollar food industry. The many facets of food science provide employment in large and small food companies, food ingredient companies, government agencies, and universities. Graduates are prepared for immediate employment, further study toward advanced degrees, or professional programs such as medicine, dentistry, pharmacy, law, and business.

Major Requirements

1. Consult with a faculty advisor prior to finalizing your curriculum plan.
2. Complete the following core requirements:
NDFS 200, 250, 251, 350, 355, 361, 362, 450, 462, 464, 465.
3. Complete the following:
Chem 105, 106, 107, 351, 352, 353, 481.
4. Complete one course from the following:
Math 112, 113, 119.
5. Complete the following:
MMBio 221, 222.
Phscs 105, 106.
Stat 221.
TMA 150.
6. During the junior year or upon declaring food science as a major, students are strongly encouraged to select one of the following options to enhance career preparation:
 - a. Choose a research topic and faculty mentor. Working in a research laboratory for 10–20 hours per week over the course of eight months, the student has daily contact with graduate students, technicians, and fellow undergraduate colleagues and frequent interactions with a faculty mentor. Student research often leads to participation in a publication and/or a presentation at a professional meeting. NDFS 494R credit is available.
 - b. Produce a senior thesis in collaboration with a faculty mentor, derived primarily from library study that extensively explores the relevant questions. The thesis is written in the format of a scientific review paper. NDFS 494R credit is available.
 - c. Work in an approved, faculty-supervised summer internship with a food company (generally the internship does not include study abroad.) NDFS 399R credit is available.

Recommended Courses

Consult with a faculty advisor before selecting:

Chem 223.
Econ 110.
Engl 316.
IAS 220.
Mfg 201, 202, 355.
NDFS 100, 191, 203.
PAS 100.
Phscs 107, 108.

*Hours include courses that may fulfill university core requirements.

BS Nutritional Science (61 hours*)

This degree provides excellent preparation for those individuals in preprofessional programs (e.g., premedicine, predentistry, prelaw) or for an advanced degree (MS, PhD) in nutrition or biological sciences.

Major Requirements

1. Complete the following core requirements:
NDFS 100, 200, 305, 394, 435.
2. After consulting with a faculty advisor, complete 8 hours from the following:
Biol 241, 340, 360.
NDFS 201, 250, 251, 310, 380, 400, 424, 494R (2 hours).
3. Complete the following:
Biol 120, 240.
Chem 105, 106, 107, 351, 352, 353 (1 hour), 481.
PDBio 305.
Phscs 105, 106, 107, 108.
Stat 221.

Recommended Courses

Biol 220.
Chem 223.
Hlth 375.
MMBio 221.

*Hours include courses that may fulfill university core requirements.

Minor Food Science (16 hours)

Many of these courses have prerequisites. Most students choosing this minor will have completed the prerequisites as part of their major. Other students will need to complete them.

Minor Requirements

1. Complete the following:
NDFS 250, 251.
2. After consulting with a faculty advisor, complete 12 hours from the following:
NDFS 350, 355, 361, 362, 450, 462, 464.

Minor Nutrition (16 hours)

Many of these courses have prerequisites. Most students choosing this minor will have completed the prerequisites as part of their major. Other students will need to complete them.

Minor Requirements

1. Complete the following:
NDFS 100, 200.
2. After consulting with a faculty advisor, complete 10 hours from the following:
NDFS 201, 305, 310, 380, 400, 424, 435.

Nutrition, Dietetics, and Food Science (NDFS)**Undergraduate Courses**

- 100. Essentials of Human Nutrition.** (3:3:0) F, W, Sp
Food-oriented study of nutrition facts and principles as a basis for dietary choices; consequences of choices; scientifically examining controversial topics.
- 191. Introduction to Food Science.** (1:1:0) F, W
Guest lectures and exposure to vocations in food science.

200. Nutrient Metabolism. (3:3:0) F, Sp Prerequisite: NDFS 100 and organic chemistry, or concurrent enrollment.

Chemical structures of nutrients; their food sources, requirements, digestion, absorption, transport, metabolism, functions, storage, and excretion; metabolic consequences of nutrient deficiencies, interactions, imbalances, and toxicities.

201. Nutrition and Prevention of Chronic Disease. (2:2:0) W
Prerequisite: NDFS 100.

Role of dietary choices in preventing or ameliorating chronic diseases. Examples of dietary interventions.

203. International Agriculture and Nutrition. (2:2:0) W

Causes of malnutrition and agricultural solutions.

250. Essentials of Food Science. (3:3:0) F, W, Sp Prerequisite: organic chemistry or concurrent enrollment; and concurrent enrollment in NDFS 251.

Overview of food science, including chemical, physical, and microbiological principles related to food processing, storage, and utilization. Current issues in food science.

251. Essentials of Food Science Laboratory. (1:0:3) F, W, Sp
Prerequisite: concurrent enrollment in NDFS 250.

Laboratory experience in the chemistry of changes occurring during food processing, storage, and utilization.

290. Introduction to Dietetics. (1:1:0) F

The profession of dietetics; exposure to specialty areas through guest lectures.

292R. Fieldwork in Dietetics. (0.5–2:Arr.:Arr. ea.) F, W, Sp, Su
Prerequisite: instructor's consent.

Fieldwork for international students.

300. Clinical Nutrition 1. (4:4:0) F Prerequisite: NDFS 200; physiology, biochemistry; dietetics major status.

Nutritional assessment and medical nutrition therapy across disease states.

305. Nutritional Implications of Disease. (4:4:0) For nutritional science majors. W Prerequisite: NDFS 200; PDBio 305; Chem 285 or 481 or equivalent; or instructor's consent.

Nutritional assessment and medical nutrition therapy across disease states.

310. Sports Nutrition. (2:2:0) F, Sp Prerequisite: NDFS 100, PDBio 305.

Scientific basis for the role of nutrition in human performance. Critical evaluation of popular practices; making optimal food choices for physical activity.

330. Comparative Animal Nutrition. (3:3:0) W

Comparative digestion, absorption, and utilization of nutrients and nutritional applications of domestic, pet, and wildlife species.

350. Food Analysis. (4:3:3) W Prerequisite: Chem 351, 352, 353; NDFS 250, 251.

Principles, methods, and techniques of qualitative and quantitative physical, chemical, and biological analysis of food and food ingredients.

355. Food Process Engineering. (4:3:3) W Prerequisite: Phscs 105 and calculus.

Mass and energy balances, thermodynamics, fluid flow, heat and mass transfer; unit operations in food processing, including thermal processing, frying, irradiation, refrigeration, freezing, and dehydration.

356. Clinical Nutrition 2. (3:3:0) W Prerequisite: NDFS 300.

Medical nutrition therapy across disease states; continuation of NDFS 300.

361. Food Microbiology. (3:2:3) F Prerequisite: MMBio 221, 222; or equivalents.

Pathogenic and spoilage microorganisms in foods and their control. Beneficial microorganisms in food systems. Influence of the food system on growth and survival of microorganisms.

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362. Food Commodity Processing. (3:2:3) F Prerequisite: Phscs 105, MMBio 221, 222, Chem 106, 107.

Characteristics of raw food material; principles of food preservation and food processing techniques; packaging materials and methods; sanitation and water and waste management.

374. Food Production Management. (2:2:0) F Prerequisite: NDFS 200, 250, 251.

Managing processes and techniques of quantity food production in commercial and institutional food systems.

375. Food Production Management Laboratory. (2:0:8) F, W Prerequisite: NDFS 374 or concurrent enrollment.

380. International Nutrition and Health. (3:3:0) W even yr. Prerequisite: NDFS 200 or instructor's consent.

Causes and consequences of nutrient deficiencies common in developing countries. Appropriate interventions to prevent or treat malnutrition.

390R. Special Topics in Food Science and Nutrition. (1–3:Arr.:0 ea.)

Topics vary.

394. Nutrition Research Fundamentals. (1:1:0) F Prerequisite: NDFS 200 or instructor's consent.

Design and protocols for and ethics of research with human subjects and animals. Scientific literature searches and presentations.

399R. Academic Internship. (1–9:Arr.:Arr. ea.) F, W, Sp, Su Prerequisite: instructor's consent.

Off-campus work experience sponsored by industrial, government, or academic institutions.

400. Community Nutrition. (3:3:4) F Prerequisite: dietetics major or NDFS 200 or 201.

Public health nutrition applied to community programs.

401. Community Nutrition Fieldwork. (0.5:0:2) F Prerequisite: NDFS 300, concurrent enrollment in NDFS 400, and dietetic major status.

Experience in public health and community nutrition programs.

405. Nutrition Assessment Lab. (0.5:0:3) F on blk. Prerequisite: NDFS 300, 356.

Developing skill in anthropometric, biochemical, clinical, and dietary parameters of nutritional assessment.

424. Nutrition Through the Life Cycle. (2:2:0) W Prerequisite: NDFS 300 or 305 or instructor's consent.

Dietary recommendations for pregnancy and lactation; infant feeding; nutritional requirements, diet, and health concerns of preschoolers, school-age children, adolescents, and the elderly.

435. Nutritional Biochemistry. (4:4:0) F, W Prerequisite: NDFS 200; PDBio 305; biochemistry or equivalent.

Metabolic interrelationships among nutrients.

440. Teaching Methods in Dietetics. (3:3:0) F

Learning settings, learning theory; curriculum development and dissemination for dietetics majors.

445. Food Service Systems. (3:3:0) W Prerequisite: NDFS 374.

Input, transformation, and output in the food service system; emphasizes procurement, production, service, and sanitation.

450. Food Chemistry. (3:3:0) F Prerequisite: NDFS 250, 251.

Structure and properties of food components, including water, carbohydrates, protein, lipids, other nutrients, and food additives. Chemistry of changes occurring during processing, storage, and utilization.

458. Management in Dietetics. (3:3:0) F Prerequisite: NDFS 445.

Management cycle and theory applied to clinical and administrative dietetics.

462. Food Regulations and Quality Assurance. (2:2:0) F Prerequisite: Stat 221, NDFS 250, 251.

Federal and international food regulations and methods of assuring food quality.

464. Food Sensory Evaluation. (1:0:3) W Prerequisite: NDFS 200, 350, 355, 361, 362, 450, 462, or concurrent enrollment; concurrent enrollment in NDFS 465.

Analytical and affective methods of assessing sensory properties of food using statistical methods. Laboratory experience in sensory research and techniques. Integrative capstone course.

465. Food Product Development. (3:1:6) W Prerequisite: NDFS 200, 350, 355, 361, 362, 450, 462, or concurrent enrollment; concurrent enrollment in NDFS 464.

Integration and application of food science principles to develop new food products. Laboratory experience in food product design and development. Integrative capstone course.

466. Advanced Dietetics Practice. (3:3:0) W Prerequisite: NDFS 356, 445.

Skill development in specialized topics of medical nutrition therapy and administrative dietetics.

475. Research Methods in Dietetics. (2:2:0) W Prerequisite: concurrent enrollment in NDFS 466.

Research techniques in a variety of dietetics practice areas.

490. Professionalism Seminar. (2:2:0) W Prerequisite: senior status in dietetics program.

Issues in professional practice.

491. Internship Preparation. (1:1:0) F Prerequisite: senior status in dietetics program.

Selecting internship sites and preparing dietetic internship application packet.

492. Fieldwork in Nutrition, Dietetics, or Food Science. (1–8:0:24) Sp, Su Prerequisite: 12–15 credit hours in nutrition, dietetics, and food science; instructor's consent.

494R. Undergraduate Research in Nutrition, Dietetics, or Food Science. (1–3:0:9 ea.) F, W Prerequisite: instructor's and department chair's consent; 14 hours of nutrition, dietetics, and food science courses.

Mentored research experience or library thesis.

500-Level Graduate Course (available to advanced undergraduates)

520R. Supervised Practice Experience. (2–4:Arr.:Arr. ea.) F, W, Sp Prerequisite: acceptance into dietetic internship.

Supervised practice experience in clinical, management, and community dietetics settings.

Graduate Courses

For 600- and 700-level courses, see the BYU 2007–2008 Graduate Catalog.

Nutrition, Dietetics, and Food Science Faculty

Professors

Brown, Rodney J. (2005) BS, Brigham Young U., 1972; MS, Utah State U., 1977; PhD, North Carolina State U., 1978.

Christensen, Merrill J. (1982) BS, Brigham Young U., 1977; PhD, Massachusetts Inst. of Technology, 1982.

Johnston, N. Paul (1971) BA, Brigham Young U., 1966; MS, Oregon State U., 1967; MBA, U. of Utah, 1969; PhD, Oregon State U., 1971.

Ogden, Lynn V. (1984) BA, MS, Utah State U., 1966, 1967; PhD, U. of Minnesota, 1973.

Pike, Oscar A. (1986) BS, MS, Brigham Young U., 1980, 1982; PhD, Purdue U., 1986.

Rowe, Mark J. (1987) BS, PhD, Brigham Young U., 1968, 1972.

Associate Professors

Brown, Lora Beth (1983) BS, Iowa State U., 1965; MS, Cornell U., 1967; EdD, Brigham Young U., 1982.

Dunn, Michael L. (2003) BS, MS, Brigham Young U., 1987, 1989; PhD, Cornell U., 1996.

Franz, Kay B. (1968) BS, U. of California, Berkeley, 1958; MS, Brigham Young U., 1968; PhD, U. of California, Berkeley, 1978.
 Nyland, Nora K. (1982) BS, MS, Brigham Young U., 1974, 1981; PhD, Kansas State U., 1989.

Associate Teaching Professors

Fullmer, Susan (1997) BA, MS, U. of Utah, 1986, 1989; PhD, Brigham Young U., 2004.
 McGuire, Diana L. (1988) BS, MS, Brigham Young U., 1974, 1976.

Assistant Professors

Davidson, Robert T. (2003) BS, MS, Utah State U., 1992, 1994; PhD, U. of Wisconsin, Madison, 1998.
 Steele, Frost M. (1996) BS, MS, Brigham Young U., 1985, 1987; PhD, Purdue U., 1990.

Part-Time Instructor

Duncan, Julie A. (1999) BS, Brigham Young U., 1993; MPH, U. of Utah, 1998.

Part-Time Associate Lecturer

Mitchell, Ana W. (1996) BS, MS, Brigham Young U., 1993, 1996.

Scientist

Hawkins, Ernest W. (1976) BS, MS, Brigham Young U., 1978, 1984; PhD, U. of Wyoming, 1988.

Adjunct Faculty

Austin, Bishop, Eliason, Heald, Heap, McClellan, Metos, Nielsen, Radford, Robson, Scott, Ware.

Emeriti

Bates, Winifred W. (1977) BS, Utah State U., 1944; MJ, U. of California, Berkeley, 1965.
 Hill, John M. (1971) BA, PhD, Rice U., 1961, 1965.
 Huber, Clayton S. (1976) BS, MS, Utah State U., 1962, 1963; PhD, Purdue U., 1968.
 Johnson, John Hal (1969) BS, MS, Brigham Young U., 1955, 1957; PhD, Ohio State U., 1963.
 Turner, Lavell G. W. (1963) BS, Brigham Young U., 1954; MS, U. of Wisconsin, Madison, 1959.

Philosophy

Daniel Graham, Chair
 4086 JFSB, (801) 422-2721

College of Humanities Advisement Center
 1175 JFSB, (801) 422-4789

Admission to Degree Program

All degree programs in the Department of Philosophy are open enrollment.

The Discipline

From its first appearance in ancient Greece down to the present, philosophy has sought to understand the world and the place of human beings within it. As it frames ideas by means of which to clarify and explain experience, philosophy discloses its faith in the ultimate lucidity of things. Philosophy's respect for the authority of intelligence fosters a preference for persuasion that is fundamental to personal growth and democratic society.

Students who study philosophy will find that it not only provides insight into life's fundamental concerns, it also helps them develop their capacity for clear thinking and perceptive judgment. Such competence will serve them well as they pursue further education or begin their careers.

Career Opportunities

Philosophy offers excellent career preparation, but not in the way that, say, accounting does. The value of a major in philosophy resides in the intellectual development it promotes. It lays a foundation on which more specialized study may build. In various standardized tests, philosophy majors tend to do extremely well on the verbal aptitude and on the analytic thinking sections. So philosophy can prepare a student for any type of work that requires highly developed reading and writing skills. Students who elect to major in philosophy should look beyond their bachelor's degree right from the start. For example, philosophy is an excellent background for the study of law or medicine. Those who intend to enter graduate school will need to start early on the foreign-language requirement.

General Information

The Department of Philosophy strongly recommends that StDev 317, a 1-credit-hour course, be taken at the end of the sophomore year or the beginning of the junior year. Because liberal arts degrees provide preparation in a variety of useful fields rather than a single career track, this course is recommended to help liberal arts students focus on specific educational and occupational goals and to identify the career options and educational opportunities available to them. The course will introduce them to the resources needed for accessing information about graduate schools, internships, careers, and career development. Students will learn basic employment strategies, including the steps necessary for obtaining employment related to their own specialty.

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- A minimum of 120 credit hours
- A cumulative GPA of at least 2.0