

BS in Food Science (284320) MAP Sheet

Life Sciences, Nutrition Dietetics and Food Science

For students entering the degree program during the 2017-2018 curricular year.

Food science is the multidisciplinary study of food, utilizing biology, chemistry, nutrition, engineering, and other sciences.



The recommended courses per semester listed on this MAP are for the Food Science Technical Track only. The Food Science Industrial Track MAP with class recommendations per semester can be found in the NDFS Department office ESC-5221, or please contact the advisor for Food Science, Dr. Steele in ESC S-131.

University Core and Graduation Requirements				Suggested Sequence of Courses			
University Core Requirements:				FRESHMAN YEAR			
Requirements	#Classes	Hours	Classes	1st Semester		JUNIOR YEAR	
Religion Cornerstones				<u>5th Semester</u>			
Teachings and Doctrine of The Book of Mormon	1	2.0	REL A 275	CHEM 105 (FWSpSu)	4.0	Arts or Letters elective	3.0
Jesus Christ and the Everlasting Gospel	1	2.0	REL A 250	First Year Writing or American Heritage	3.0	ENGL 316 (FWSpSu) (Adv. Writing)	3.0
Foundations of the Restoration	1	2.0	REL C 225	Quantitative Reasoning (if needed)	3.0	NDFS 361 (F)	3.0
The Eternal Family	1	2.0	REL C 200	NDFS 191	1.0	NDFS 362 (F)	3.0
The Individual and Society				Religion Cornerstone course		Religion elective	
American Heritage	1-2	3-6.0	from approved list	General Electives	2.0	General electives	1.0
Global and Cultural Awareness	1	3.0	from approved list	Total Hours	15.0	Total Hours	15.0
Skills				The following semester recommendations are for the Food Science Technical Track			
First Year Writing	1	3.0	from approved list	<u>6th Semester</u>			
Advanced Written and Oral Communications	1	3.0	ENGL 316	NDFS 350 (W)		NDFS 355 (W)	4.0
			Recommended	STAT 121	3.0	Religion electives	2.0
Quantitative Reasoning	1	3-4.0	from approved list	Total Hours	14.0	SENIOR YEAR	
Languages of Learning (Math or Language)	1	3.0	STAT 121*	<u>7th Semester</u>			
Arts, Letters, and Sciences				<u>2nd Semester</u>			
Civilization 1	1	3.0	from approved list	First-year Writing or American Heritage	3.0	CHEM 481 (FWSpSu)	3.0
Civilization 2	1	3.0	from approved list	CHEM 106, 107 (FWSpSu)	4.0	NDFS 450 (F)	3.0
Arts	1	3.0	from approved list	NDFS 100 (FWSu)	3.0	NDFS 462 (F)	3.0
Letters	1	3.0	from approved list	PHSCS 105 (FWSp)	3.0	Civilization 1 elective	3.0
Biological Science	1	3.0	NDFS 100*	Religion Cornerstone course	2.0	Arts or Letters elective	3.0
Physical Science	2	7.0	PHSCS 105* and CHEM 105*	Total Hours	15.0	Total Hours	15.0
Social Science	1	3.0	ECON 110 recommended	SOPHOMORE YEAR			
Core Enrichment: Electives				<u>3rd Semester</u>			
Religion Electives	3-4	6.0	from approved list	CHEM 351 (FWSp)	3.0	NDFS 200 (FSp)	3.0
Open Electives	Variable	Variable	personal choice	NDFS 250 (FWSp)	3.0	NDFS 251 (FWSp)	1.0
Graduation Requirements:				<u>4th Semester</u>			
Minimum residence hours required		30.0		PHSCS 106 (FWSu)	3.0	Religion Cornerstone Course	2.0
Minimum hours needed to graduate		120.0		Religion Cornerstone Course	2.0	Total Hours	15.0
				STAT 121	3.0	<u>8th Semester</u>	
				STDEV 150	3.0	NDFS 464 (W)	2.0
				Total Hours	16.0	NDFS 465 (W)	3.0
						Social Science elective	3.0
						Religion elective	2.0
						Civilization 2 elective	3.0
						Global & Cultural Awareness elective	3.0
						Total Hours	16.0
						Note: Students are encouraged to complete an average of 15 credit hours each semester or 30 credit hours each year, which could include spring and/or summer terms. Taking fewer credits substantially increases the cost and the number of semesters to graduate.	

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2017-2018 Program Requirements (66 - 68 Credit Hours)

Consult with a faculty advisor prior to finalizing your curriculum plan.

REQUIREMENT 1 Complete 14 courses

CORE REQUIREMENTS:

CHEM 105 - General College Chemistry 1 with Lab (Integrated)	4.0
MMBIO 221 - General Microbiology	3.0
MMBIO 222 - General Microbiology Laboratory	1.0
*NDFS 100 - Essentials of Human Nutrition	3.0
NDFS 191 - Careers in Food Science	1.0
NDFS 250 - Essentials of Food Science	3.0
NDFS 251 - Essentials of Food Science Laboratory	1.0
NDFS 350 - Food Analysis	4.0
NDFS 355 - Food Process Engineering	4.0
NDFS 361 - Food Microbiology	3.0
NDFS 362 - Food Commodity Processing	3.0
NDFS 462 - Food Regulations and Quality Assurance	3.0
PHSCS 105 - General Physics 1	3.0
*STAT 121 - Principles of Statistics	3.0

REQUIREMENT 2 Complete 1 option

COMPLETE ONE OF THE FOLLOWING TRACKS:

OPTION 2.1 Complete 2 groups

A. FOOD SCIENCE TECHNICAL TRACK:

GROUP 2.1.1 Complete 10 courses

CHEM 106 - General College Chemistry 2	3.0
CHEM 107 - General College Chemistry Laboratory	1.0
CHEM 351 - Organic Chemistry 1	3.0
CHEM 352 - Organic Chemistry 2	3.0
CHEM 353 - Organic Chemistry Laboratory--Nonmajors	2.0v
CHEM 481 - Biochemistry	3.0
NDFS 450 - Food Chemistry	3.0
NDFS 464 - Food Sensory Evaluation	2.0
NDFS 465 - Food Product Development	3.0
PHSCS 106 - General Physics 2	3.0

GROUP 2.1.2 Complete 1 course

MATH 112 - Calculus 1	4.0
MATH 119 - Introduction to Calculus	4.0

OPTION 2.2 Complete 3 groups

B. FOOD INDUSTRY MANAGEMENT TRACK:

GROUP 2.2.1 Complete 8 courses

ACC 200 - Principles of Accounting	3.0
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BUS M 488 - Agribusiness Management 1	3.0
BUS M 489 - Agribusiness Management 2	3.0
CHEM 285 - Introductory Bio-organic Chemistry	4.0
ECON 110 - Economic Principles and Problems	3.0
FIN 201 - Principles of Finance	3.0
NDFS 399R - Academic Internship	9.0v
<i>You may take up to 9 credit hours.</i>	
ORG B 320 - Organizational Effectiveness	3.0
GROUP 2.2.2 Complete 1 course	
BUS M 371R - Entrepreneurship Lecture Series	1.0
<i>You may take this course up to 1 time.</i>	
BUS M 380 - Executive Lectures	1.0
BUS M 382 - Technology Entrepreneurship Lecture Series	1.0
GROUP 2.2.3 Complete 1 course	
BUS M 372 - Basic Entrepreneurship Skills	3.0
NDFS 200 - Nutrient Metabolism	3.0
NDFS 450 - Food Chemistry	3.0
NDFS 465 - Food Product Development	3.0

REQUIREMENT 3

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 (STUDENTS IN FOOD INDUSTRY MANAGEMENT TRACK MUST TAKE 1 CREDIT HOUR OF NDFS 399R TO GRADUATE):

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 Complete 13 courses

A. FOOD SCIENCE TECHNICAL TRACK - RECOMMENDED COURSES (CONSULT WITH A FACULTY ADVISOR BEFORE SELECTING):

CHEM 223 - Quantitative and Qualitative Analysis	4.0
ECON 110 - Economic Principles and Problems	3.0
ENGL 316 - Technical Communication	3.0
IAS 220 - Introduction to Development Studies	3.0
MFG 355 - Plastics Materials and Processing	3.0
NDFS 200 - Nutrient Metabolism	3.0
PHSCS 107 - General Physics Lab 1	1.0
PHSCS 108 - General Physics Lab 2	1.0
PWS 100 - Plants in the Environment	3.0
STDEV 150 - Public Speaking	3.0
STDEV 317 - Career Strategies for Employment and Internships	2.0
TECH 201 - History of Creativity and Innovation in the Arts, Science, and	3.0
TECH 202 - History of Creativity and Innovation in the Arts, Science, and	3.0

RECOMMENDED Complete 2 options

B. FOOD INDUSTRY MANAGEMENT TRACK - RECOMMENDED COURSES (CONSULT WITH A FACULTY ADVISOR BEFORE SELECTING):

RECOMMENDED Complete 1 course

ENGL 316 - Technical Communication	3.0
M COM 320 - Communication in Organizational Settings	3.0

RECOMMENDED Complete 11 courses

IAS 220 - Introduction to Development Studies	3.0
MATH 119 - Introduction to Calculus	4.0
MFG 479 - Innovation and Entrepreneurship	3.0
NDFS 200 - Nutrient Metabolism	3.0
NDFS 450 - Food Chemistry	3.0
NDFS 464 - Food Sensory Evaluation	2.0
PHSCS 106 - General Physics 2	3.0
PWS 100 - Plants in the Environment	3.0
STDEV 150 - Public Speaking	3.0
TECH 201 - History of Creativity and Innovation in the Arts, Science, ar	3.0
TECH 202 - History of Creativity and Innovation in the Arts, Science, ar	3.0

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, produced and tested by food scientists. Students graduating in Food Science are well prepared for immediate employment in the food industry. The technical track curriculum also provides excellent preparation as a premedical, pre dental or other preprofessional major. With one additional credit hour, students graduating in

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the technical track are able to obtain a minor in chemistry. Students pursuing the management track are eligible to apply for a business minor and are well prepared for graduate studies in a Master of Business Administration (MBA) program.

PRACTICAL EXPERIENCE AND INTERNSHIPS:

Students can get hands-on experience working several semesters with faculty on research projects. Summer work opportunities are available with many food companies in numerous cities. The department has developed ongoing summer internships with several food companies.

PROFESSIONAL ASSOCIATION:

BYU's food science technical track curriculum has been reviewed and approved by the Institute of Food Technologists (IFT), the professional society of food scientists.

HONORARY SOCIETIES AND CLUBS:

Students and faculty interact in the various social, service and career-related activities of the Food Science Club. The Food Science Club is a student chapter of IFT and participates in the statewide IFT Bonneville Section, which helps students develop a network of professional contacts. Students may also participate in Food Science College Bowl and other student competitions sponsored by IFT.

CAREERS:

Food Science provides excellent career prospects in the worldwide, multibillion dollar food industry. The food industry is consistently looking for graduates to fill all of the unique and challenging opportunities available. Potential careers include: Food research and development scientist-Develops new food products according to market demand. Improves and modifies existing foods to meet current consumer wants. Participates in manufacturing scale-up and commercialization of lab prototypes.

Food plant production manager-Manages and supervises food processing plant. Uses technical and business skills to ensure economical production. Manages personnel and solves food production problems.

Quality assurance director-Generates specifications and supervises analyses of raw materials and ingredients. Monitors food processing and assures final product quality. Assures proper sanitation.

Food Ingredient technical salesperson-Contacts industrial customers or potential users of food ingredients. Provides technical insight and assistance. Extends the company's products among consuming companies.

Basic research scientist-Conducts basic and applied food research.

Works in industry, academia, or government.
(See faculty advisor for additional career choices.)

FINANCING:

Scholarships are available from the department, the college, and IFT.

University and federal sources of scholarships and financing are also available. Many students work part time to help with finances.

Research opportunities and summer work are available for most students. Work in the department as research or teaching assistants is available for some qualified students.

MAP DISCLAIMER

While every reasonable effort is made to ensure accuracy, there are some student populations that could have exceptions to listed requirements. Please refer to the university catalog and your college advisement center/department for complete guidelines.

DEPARTMENT INFORMATION

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