

# FOOD SCIENCE AND TECHNOLOGY - BS, FOOD SCIENCE OPTION

Food Science and Technology is an exciting multidisciplinary field that prepares majors with a comprehensive knowledge of the biological, physical and engineering sciences to develop new food products, design innovative processing technologies, improve food quality and nutritive value, enhance the safety of foods and ensure the wholesomeness of our food supply. Food Science majors apply the principles learned in the basic sciences such as food chemistry, biochemistry, genetics, microbiology, food engineering and nutrition to provide consumers with safe, wholesome and attractive food products that contribute to their health and well-being. For more information, visit <http://foodscience.tamu.edu> (<https://foodscience.tamu.edu/>).

The undergraduate curriculum is approved by the Institute of Food Technologists (IFT) and offers two tracks, a Food Science Option and an Industry Option. These tracks provide promising career opportunities in areas such as food product/process design, technical service, research and development, quality assurance, food safety, food law, regulatory oversight, technological innovation, marketing, corporate sales, sensory evaluation and operations management. There are numerous opportunities available for corporate internships, scholarships and study abroad programs that provide real-world experience and enhance opportunities for employment after completing a baccalaureate degree. The major also provides an excellent background for those interested in professional schools, graduate studies, medicine, veterinary medicine, dentistry, pharmacy, physical therapy, nursing, occupational therapy and public health.

## Food Science Option

The Food Science option provides a strong knowledge base and fundamental understanding of chemistry, biology, engineering, physics, statistics, genetics, biochemistry, microbiology and nutrition that is applied toward the preservation, processing, packaging and distribution on foods that are wholesome, affordable and safe. The goal of the curriculum is to prepare Food Scientists for career opportunities in the food and allied industries or for further studies in graduate or professional schools. See an academic advisor for specific course listings.

## Program Requirements

### First Year

Fall		Semester Credit Hours
CHEM 119	Fundamentals of Chemistry I	4
ENGL 103 or ENGL 104	Introduction to Rhetoric and Composition or Composition and Rhetoric	3
FSTC 201	Food Science	3
FSTC 210/ NUTR 210	Horizons in Nutrition and Food Science	1
Mathematics ( <a href="http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#mathematics">http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#mathematics</a> ) <sup>1</sup>		3

General elective <sup>2</sup>		1
<b>Semester Credit Hours</b>		<b>15</b>
<b>Spring</b>		
BIOL 111	Introductory Biology I	4
CHEM 120	Fundamentals of Chemistry II	4
American history ( <a href="http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#american-history">http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#american-history</a> )		3
Mathematics ( <a href="http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#mathematics">http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#mathematics</a> ) <sup>1</sup>		3
<b>Semester Credit Hours</b>		<b>14</b>
<b>Second Year</b>		
<b>Fall</b>		
CHEM 257	Organic Chemistry I - Structure and Function	4
NUTR 202 or NUTR 203	Fundamentals of Human Nutrition or Scientific Principles of Human Nutrition	3
POLS 206	American National Government	3
Select one of the following:		3
AGEC 105	Introduction to Agricultural Economics	
ECON 202	Principles of Economics	
ECON 203	Principles of Economics	
Language, philosophy and culture ( <a href="http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#language-philosophy-culture">http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#language-philosophy-culture</a> ) <sup>3</sup>		3
<b>Semester Credit Hours</b>		<b>16</b>
<b>Spring</b>		
ACCT 209	Survey of Accounting Principles	3
CHEM 258	Organic Chemistry II - Reactivity and Applications	4
PHYS 201	College Physics	4
American history ( <a href="http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#american-history">http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#american-history</a> )		3
Creative arts ( <a href="http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#creative-arts">http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#creative-arts</a> ) <sup>3</sup>		3
<b>Semester Credit Hours</b>		<b>17</b>
<b>Third Year</b>		
<b>Fall</b>		
CHEM 315	Fundamentals of Quantitative Analysis	3
CHEM 318	Quantitative Analysis Laboratory	1
ENGL 210	Technical and Professional Writing	3
FSTC 311	Principles of Food Processing	3
POLS 207	State and Local Government	3
General elective <sup>2</sup>		3
<b>Semester Credit Hours</b>		<b>16</b>
<b>Spring</b>		
FSTC 312	Food Chemistry	3
FSTC 313	Food Chemistry Laboratory	1
MGMT 309	Survey of Management	3
Select one of the following:		3

STAT 301	Introduction to Biometry	
STAT 302	Statistical Methods	
STAT 303	Statistical Methods	
Select one of the following:		3
ANSC 307	Meats	
ANSC 457/ FSTC 457	Hazard Analysis and Critical Control Point System	
FSTC 281	Introduction to Fermentation and Brewing Sciences	
FSTC 305	Fundamental Baking	
FSTC 316	Fermentation Technology for Alternative Protein Production	
FSTC 319	Molecular Methods for Microbial Detection and Characterization	
FSTC 320/ NUTR 320	Understanding Obesity - A Social and Scientific Challenge	
FSTC 324	Food Safety and Preventive Controls for Human Food	
FSTC 416	Precision Fermentation and Future of Foods	
FSTC 420	Supervised Research in Mediterranean Nutrition and Food Processing in Italy	
FSTC 422	Food Processing for Sustainable Nutrition in Brazil	
FSTC 430	Harnessing the Power of Healthy Functional Food Ingredients	
FSTC 485	Directed Studies	
FSTC 489	Special Topics in...	
FSTC 491	Research	
HORT 419	Viticulture and Small Fruit Culture	
HORT 420	Concepts of Wine Production	
HORT 421	Enology	
NUTR 211	Scientific Principles of Foods	
NUTR 300/ FSTC 300	Religious and Ethnic Foods	
NUTR 410/ FSTC 410	Nutritional Pharmacometrics of Food Compounds	
POSC 406	Poultry Further Processing	
<b>Semester Credit Hours</b>		<b>13</b>

**Fourth Year****Fall**

ANSC 326/ FSTC 326	Food Bacteriology	3
ANSC 327/ FSTC 327	Food Bacteriology Lab	1
FSTC 314	Food Analysis	3
Select one of the following:		3
ANSC 307	Meats	
ANSC 457/ FSTC 457	Hazard Analysis and Critical Control Point System	
FSTC 281	Introduction to Fermentation and Brewing Sciences	
FSTC 305	Fundamental Baking	
FSTC 316	Fermentation Technology for Alternative Protein Production	

FSTC 319	Molecular Methods for Microbial Detection and Characterization	
FSTC 320/ NUTR 320	Understanding Obesity - A Social and Scientific Challenge	
FSTC 324	Food Safety and Preventive Controls for Human Food	
FSTC 416	Precision Fermentation and Future of Foods	
FSTC 420	Supervised Research in Mediterranean Nutrition and Food Processing in Italy	
FSTC 422	Food Processing for Sustainable Nutrition in Brazil	
FSTC 430	Harnessing the Power of Healthy Functional Food Ingredients	
FSTC 485	Directed Studies	
FSTC 489	Special Topics in...	
FSTC 491	Research	
HORT 419	Viticulture and Small Fruit Culture	
HORT 420	Concepts of Wine Production	
HORT 421	Enology	
NUTR 211	Scientific Principles of Foods	
NUTR 300/ FSTC 300	Religious and Ethnic Foods	
NUTR 410/ FSTC 410	Nutritional Pharmacometrics of Food Compounds	
POSC 406	Poultry Further Processing	
General elective <sup>2</sup>		3
<b>Semester Credit Hours</b>		<b>13</b>
<b>Spring</b>		
AGSM 315/ FSTC 315	Food Process Engineering Technology	3
BICH 303 or BICH 410	Elements of Biological Chemistry or Comprehensive Biochemistry I	3
FSTC 401	Food Product Development	3
FSTC 444	Fundamentals of Food Law	3
FSTC 481	Seminar	1
General elective <sup>2</sup>		3
<b>Semester Credit Hours</b>		<b>16</b>
<b>Total Semester Credit Hours</b>		<b>120</b>

<sup>1</sup> MATH prefix required.<sup>2</sup> Students may earn a chemistry minor by taking 6 hours of additional chemistry courses from an approved list as general electives. See the Department of Chemistry for more details. Students seeking a minor in chemistry must complete the Declaration of Minor in Chemistry form and have it approved by the undergraduate advisor in chemistry and their FSTC advisor.<sup>3</sup> The graduation requirements include a requirement for 3 hours of International and Cultural Diversity (<http://catalog.tamu.edu/undergraduate/general-information/degree-information/international-cultural-diversity-requirements/>) and 3 hours of Cultural Discourse (<http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/>). Selection must be from courses on the approved list. Selection can be courses that also satisfy the requirement for social and behavioral sciences; creative arts; language, philosophy and culture; or electives. For more information

on core requirements visit the University Core Curriculum (<http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/>) catalog page.

A total of 120 hours is required for graduation; 36 hours of 300/400 level courses are required to meet the Texas A&M University residency requirement.