

# 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                               | 2                     |

|  |   |
|--|---|
| 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 |
|--|---|

### Semester Credit Hours 15

#### Spring

|  |                              |   |
|--|------------------------------|---|
| 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 |

### Semester Credit Hours 14

#### Second Year

##### Fall

|                              |   |   |
|------------------------------|---|---|
| CHEM 227                     | Organic Chemistry I   | 3 |
| CHEM 237                     | Organic Chemistry Laboratory  | 1 |
| 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>2</sup> | 3 |
|---|---|

### Semester Credit Hours 16

#### Spring

|  |                                 |   |
|--|---------------------------------|---|
| ACCT 209   | Survey of Accounting Principles | 3 |
| CHEM 228   | Organic Chemistry II            | 3 |
| CHEM 238   | Organic Chemistry Laboratory    | 1 |
| 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>2</sup> |                                 | 3 |

### Semester Credit Hours 17

#### Third Year

##### Fall

|                               |                                       |   |
|-------------------------------|---------------------------------------|---|
| 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>3</sup> |                                       | 3 |

### Semester Credit Hours 16

#### Spring

|          |                           |   |
|----------|---------------------------|---|
| 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/<br>FSTC 307        | Meats   |           |
| ANSC 457/<br>FSTC 457        | Hazard Analysis and Critical Control Point System                           |           |
| FSTC 305                     | Fundamental Baking  |           |
| FSTC 320/<br>NUTR 320        | Understanding Obesity - A Social and Scientific Challenge                   |           |
| FSTC 324                     | Food Safety and Preventive Controls for Human Food                          |           |
| FSTC 406/<br>POSC 406        | Poultry Further Processing  |           |
| FSTC 420                     | Supervised Research in Mediterranean Nutrition and Food Processing in Italy |           |
| FSTC 422                     | Food Processing for Sustainable Nutrition in Brazil                         |           |
| 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                     | Religious and Ethnic Foods  |           |
| NUTR 410/<br>FSTC 410        | Nutritional Pharmacometrics of Food Compounds                               |           |
| <b>Semester Credit Hours</b> |   | <b>13</b> |

**Fourth Year****Fall**

|                              |   |   |
|------------------------------|---|---|
| ANSC 326/<br>FSTC 326        | Food Bacteriology   | 3 |
| ANSC 327/<br>FSTC 327        | Food Bacteriology Lab   | 1 |
| FSTC 314                     | Food Analysis   | 3 |
| Select one of the following: |   | 3 |
| ANSC 307/<br>FSTC 307        | Meats   |   |
| ANSC 457/<br>FSTC 457        | Hazard Analysis and Critical Control Point System                           |   |
| FSTC 305                     | Fundamental Baking  |   |
| FSTC 320/<br>NUTR 320        | Understanding Obesity - A Social and Scientific Challenge                   |   |
| FSTC 324                     | Food Safety and Preventive Controls for Human Food                          |   |
| FSTC 406/<br>POSC 406        | Poultry Further Processing  |   |
| FSTC 420                     | Supervised Research in Mediterranean Nutrition and Food Processing in Italy |   |
| FSTC 422                     | Food Processing for Sustainable Nutrition in Brazil                         |   |

|                                    |   |            |
|------------------------------------|---|------------|
| 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                           | Religious and Ethnic Foods  |            |
| NUTR 410/<br>FSTC 410              | Nutritional Pharmacometrics of Food Compounds                       |            |
| General elective <sup>3</sup>      |   | 3          |
| <b>Semester Credit Hours</b>       |   | <b>13</b>  |
| <b>Spring</b>                      |   |            |
| AGSM 315/<br>FSTC 315              | Food Process Engineering Technology                                 | 3          |
| BICH 303<br>or BICH 410            | Elements of Biological Chemistry<br>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>3</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> 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.

<sup>3</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 (Room 104 Chemistry) and their FSTC advisor.

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.