

BAKERY SCIENCE AND MANAGEMENT CURRICULUM GUIDE

Department of Grain Science & Industry

Fall 2018 / Spring 2019

Production Management Option

| Fall | | Spring | | | |
|------------------------|--------------------------|-----------|---------------------------|------------------------|-----------|
| Freshman | | | | | |
| BIOL 198 | Prin. of Biology | 4 | CHM 210 | Chemistry I | 4 |
| ECON 110 | Macro Economics | 3 | COMM 106 | Public Speaking | 3 |
| ENGL 100 | Expo Writing I | 3 | ENGL 200 | Expo Writing II | 3 |
| ^F GRSC 100 | Freshman Orientation | 1 | GRSC 150 | Prin of Milling | 2 |
| ^F GRSC 101 | Intro to GSI | 3 | GRSC 151 | Prin of Milling Lab | 1 |
| | | | MATH 205 | Gen. Calc & Lin. Algeb | 3 |
| | | 14 | | | 16 |
| Sophomore | | | | | |
| AGEC 120 | Ag Econ & Ag Bus | 3 | ACCTG 231 | Acct. Bus. Ops | 3 |
| ^{or} ECON 120 | Micro Econ | 3 | BIOCH 265 | Biochemistry | 5 |
| CHM 230 | Chemistry II | 4 | ^{or} CHM 350/351 | Gen Organic Chem & Lab | 5 |
| PHYS 113 | Gen. Physics I | 4 | BIOL 455 | Gen. Microbiology | 4 |
| STAT 325 | Intro to Statistics | 3 | ^S GRSC 310 | Materials Handling | 3 |
| | Business Elective* | 3 | ^S GRSC 405 | Grain Analysis Tech | 2 |
| | | 17 | | | 17 |
| Junior | | | | | |
| ^F FDSCI 600 | Food Micro | 2 | ^S FDSCI 305 | Food Processing | 3 |
| ^F FDSCI 601 | Food Micro Lab | 2 | ^S GRSC 600 | AIB Practicum-I ** | 1 |
| ^F GRSC 602 | Cereal Sci. | 3 | ^{or} GRSC 601 | AIB Practicum-II ** | 1 |
| ^F GRSC 635 | Baking Sci. I | 2 | ^S GRSC 637 | Baking Sci. II | 3 |
| ^F GRSC 636 | Baking Sci. I Lab | 2 | ^S GRSC 638 | Baking Sci. II Lab | 1 |
| PHYS 114 | Gen. Physics II | 4 | ^S GRSC 540 | Process Calculations | 3 |
| | Communication Elective | 3 | | Business Elective* | 3 |
| | | | | Social Sci Elective | 3 |
| | | 18 | | | 17 |
| Senior | | | | | |
| FNDH 132 | Basic Nutrition | 3 | ^S GRSC 625 | Flour & Dough Testing | 3 |
| ^F GRSC 591 | Internship in Grain Sci | 1 | ^S GRSC 670 | Bakery Layout | 1 |
| | Business Elective | 3 | ^S GRSC 651 | Food/Feed Prod | 4 |
| | Specialization Electives | 8 | | Business Elective* | 3 |
| | | | | Free Elective | 3 |
| | | 15 | | | 14 |

^F Fall only, ^S Spring only.

Minimum of 128 credits required for graduation.

* To complete a Business Minor, the following courses are recommended: ACCTG 231, ACCTG 241, MANGT 420, MKTG 400 and FINAN 450. Note that ACCTG 231 is already part of the core requirements. Students are encouraged to select the remaining courses and utilize them both for "BSM business electives" and "minor requirements".

** January intersession: One week training at AIB

Cereal Chemistry Option

| Fall | | Spring | | | |
|------------------------|-------------------------|-----------|------------------------|-------------------------|-----------|
| Freshman | | | | | |
| BIOL 198 | Prin. of Biology | 4 | CHM 230 | Chemistry II | 4 |
| CHM 210 | Chemistry I | 4 | ECON 110 | Macro Economics | 3 |
| COMM 105 | Public Speaking | 2 | ENGL 100 | Expos Writing I | 3 |
| ^F GRSC 100 | Freshman Orientation | 1 | GRSC 150 | Prin of Milling | 2 |
| ^F GRSC 101 | Intro to GRSC | 3 | GRSC 151 | Prin of Milling Lab | 1 |
| | | | MATH 220 | Analy Geo & Calc I | 4 |
| | | 14 | | | 17 |
| Sophomore | | | | | |
| BIOL 455 | Gen. Micro | 4 | ACCTG 231 | Acct. Bus. Ops | 3 |
| CHM 531 | Organic Chem I | 3 | BIOCH 521 | Gen. Biochemistry | 3 |
| ENGL 200 | Expos Writing II | 3 | BIOCH 522 | Gen. Biochem. Lab | 2 |
| MATH 221 | Analy Geo & Cal II | 4 | CHM 532 | Organic Chem I Lab | 2 |
| | Free Elective | 3 | ^S GRSC 310 | Materials Handling | 3 |
| | | | STAT 325 | Statistics | 3 |
| | | 17 | | | 16 |
| Junior | | | | | |
| CHM 550 | Organic Chem II | 3 | ^S GRSC 600 | AIB Practicum-I * | 1 |
| ^F FDSCI 600 | Food Micro | 2 | ^{or} GRSC 601 | AIB Practicum-II * | 1 |
| ^F FDSCI 601 | Food Micro Lab | 2 | ^S GRSC 625 | Flour and Dough | 3 |
| ^F GRSC 602 | Cereal Sci. | 3 | ^S GRSC 637 | Baking Sci. II | 3 |
| ^F GRSC 635 | Baking Sci. I | 2 | ^S GRSC 638 | Baking Sci. II Lab | 1 |
| ^F GRSC 636 | Baking Sci. I Lab | 2 | PHYS 213 | Eng. Physics I | 5 |
| PHYS 114 | Gen. Physics II | 4 | | Specialization Elective | 3 |
| | Specialization Elective | 3 | | | |
| | | 17 | | | 16 |
| Senior | | | | | |
| ^F FDSCI 727 | Chem Methods Food | 2 | ^S CHM 500 | Gen. Phys Chem | 3 |
| FNDH 132 | Basic Nutrition | 3 | ^S FDSCI 501 | Food Chemistry | 3 |
| ^F GRSC 591 | Internship | 1 | ^S GRSC 651 | Food/Feed Prot | 4 |
| PHYS 214 | Eng. Physics II | 5 | ^S GRSC 670 | Bakery Layout | 1 |
| | Communication Elective | 3 | | Social Sci Elective | 3 |
| | | | | Management Elective | 3 |
| | | 14 | | | 17 |

^F Fall only, ^S Spring only.

K-State 8 General Education requirements:

Students must meet the requirements of the K-State 8 General Education Program.

BSM core curriculum fulfills some of the K-state-8 requirements. Advisors and students need to make the *right course choices* for the ELECTIVES to satisfy the remaining K-State 8 requirements.

K-State 8 tags:

- 1) Aesthetic Experience and Interpretive Understanding*
- 2) Empirical and Quantitative Reasoning
- 3) Ethical Reasoning & Responsibility*
- 4) Global Issues & Perspectives*
- 5) Historical Perspectives*
- 6) Human Diversity within the U.S.*
- 7) Natural and Physical Sciences
- 8) Social Sciences

Areas indicated with an () are not satisfied through the core course requirements. Special attention has to be given while selecting the elective courses to fulfill these K-State 8 areas. Please check the link below for complete list of courses tagged for the K-State 8 areas:*

<http://www.k-state.edu/kstate8/lists/>

Communication electives:

| | |
|--|---|
| AGCOM 400 - Agricultural Business Communications | 3 |
| ^{1,3} COMM 311 - Business and Professional Speaking | 3 |
| ENGL 516 - Written Communication for the Sciences..... | 3 |

Management electives (for CC option, 3 hrs required):

| | |
|---|---|
| ^{3,6} GRSC 530 - Management Applications in Grain Processing Industries..... | 3 |
| MANGT 420 - Management Concepts | 3 |
| ⁵ MANGT 530 - Industrial and Labor Relations..... | 3 |
| ⁶ MANGT 531 - Human Resources Management | 3 |

Business electives (for PM option, 12 hrs required)*:**

| | |
|---|---|
| ACCTG 241 - Accounting for Investing and Financing..... | 3 |
| ACCTG 331 - Intermediate Accounting Processes | 4 |
| AGEC 500 - Production Economics..... | 3 |
| AGEC 515 - Food and Agribusiness Marketing | 3 |
| FINAN 450 - Principles of Finance | 3 |
| IMSE 501 - Industrial Management..... | 3 |
| MANGT 300 - Introduction to Total Quality Management..... | 1 |
| MANGT 530 - Industrial and Labor Relations | 3 |
| MKTG 400 - Introduction to Marketing..... | 3 |
| MKTG 542 - Fundamentals of Professional Selling..... | 3 |

Specialization electives*:**

| | |
|--|-----|
| ACCTG 241 - Accounting for Investing and Financing (PM)..... | 3 |
| ACCTG 331 - Intermediate Accounting Processes (PM) | 4 |
| AGEC 500 - Production Economics (PM) | 3 |
| AGEC 515 - Food and Agribusiness Marketing (PM)..... | 3 |
| CHM 371 - Chemical Analysis (CC) | 4 |
| FDSCI 690 - Principles of HACCP and HARPC (both) | 3 |
| FDSCI 710 - Kosher and Halal Food Regulations (both) | 2 |
| FDSCI 728 - Physical Methods of Food Analysis (both) | 2 |
| FDSCI 740 - Research and Development of Food Products (both) | 4 |
| FDSCI 751 - Food Laws and the Regulatory Process (both) | 2 |
| FINAN 450 - Principles of Finance (PM)..... | 3 |
| GRSC 201 - Fundamental Baking Calculations (both) | 1 |
| ⁴ GRSC 491 - Faculty-Led Study Abroad (both)..... | 1-3 |
| GRSC 499 - Undergraduate Research in Grain Science (both)..... | 0-3 |
| ^{3,6} GRSC 530 - Management Applications in Grain Processing Industries (both)..... | 3 |
| GRSC 540 - Process Calculations in Food Systems (PM) | 3 |
| GRSC 541 - Process Calculations in Food Systems Laboratory (both)..... | 1 |

| | |
|---|-----|
| GRSC 560 - Electricity and Industrial Power Distribution (both) | 3 |
| GRSC 592 - Extended Internship in Grain Science (both) | 1 |
| GRSC 620 - Extrusion Processing in the Food and Feed Industries (both)..... | 4 |
| GRSC 712 - Vibrational Spectroscopic Analysis and Chemometrics (both) | 1-2 |
| GRSC 713 - Contemporary Chromatographic Analysis of Food (both) | 1 |
| GRSC 745 - Fundamentals of Bioprocessing (both)..... | 3 |
| IMSE 501 - Industrial Management (PM)..... | 3 |
| ⁶ LEAD 212 - Introduction to Leadership Concepts (both) | 2-3 |
| ^{4,6} LEAD 350 - Culture and Context in Leadership (both) | 3 |
| MANGT 300 - Introduction to Total Quality Management (PM)..... | 1 |
| MANGT 420 - Management Concepts (both) | 3 |
| ⁵ MANGT 530 - Industrial and Labor Relations (both)..... | 3 |
| ⁶ MANGT 531 - Human Resources Management (both) | 3 |
| MKTG 400 - Introduction to Marketing (PM)..... | 3 |
| MKTG 542 - Fundamentals of Professional Selling (PM)..... | 3 |

(CC) Cereal chemistry option, (PM) Production management option, (both) Both options

**** All of the business electives are also listed under the specialization electives list. However, this does not mean that a course can be used for both categories. This is to provide an opportunity to utilize an unused business elective as a specialization elective, if the student has further interest in these subjects.*

BAKERY SCIENCE MINOR:

| | |
|--|-----------|
| GRSC 101 - Introduction to Grain Science and Industry..... | 3 |
| GRSC 602 - Cereal Science | 3 |
| GRSC 625 - Flour and Dough Testing | 3 |
| GRSC 635 - Baking Science I..... | 2 |
| GRSC 636 - Baking Science I Laboratory..... | 2 |
| GRSC 637 - Baking Science II..... | 3 |
| GRSC 638 - Baking Science II Laboratory..... | 1 |
| TOTAL..... | 17 |

Grain science majors cannot use courses required in their major as part of a Bakery Science Minor.

CEREAL CHEMISTRY MINOR:

| | |
|---|-----------|
| GRSC 150 - Principles of Milling | 2 |
| GRSC 151 - Principles of Milling Laboratory..... | 1 |
| GRSC 405 - Grain Analysis Techniques | 2 |
| GRSC 602 - Cereal Science | 3 |
| GRSC 625 - Flour and Dough Testing | 3 |
| Choose from the following (7 hours): | |
| GRSC 620 - Extrusion Processing in the Food and Feed Industries | 4 |
| GRSC 635 - Baking Science I | 2 |
| GRSC 712 - Vibrational Spectroscopic Analysis and Chemometrics | 1-2 |
| GRSC 713 - Contemporary Chromatographic Analysis of Food..... | 1 |
| GRSC 790 - Grain Science Problems..... | 1-18 |
| TOTAL..... | 17 |

Grain science majors cannot use courses required in their major as part of a Cereal Chemistry Minor.

In order to obtain a minor degree students must:

- Complete the required courses with a cumulative GPA of at least 2.0.
- Take a minimum of 11 credit hours from Kansas State plus a maximum of six transfer credits approved by the department for a total of 17 credit hours to complete the minor requirements.