

## MILLING SCIENCE & MANAGEMENT CURRICULUM GUIDE

KSU Department of Grain Science & Industry

Fall 2018 / Spring 2019

Fall		Spring	
<b>Freshman</b>			
BIOL 198 - Prin of Biology	4	CHM 210 - Chemistry I	4
ECON 110 - Prin of Macroeconomics	3	GRSC 150 - Prin of Milling	2
ENGL 100 - Expository Writing I	3	GRSC 151 - Prin of Milling Lab	1
<sup>F</sup> GRSC 100 - Freshman Orientation in Grain Sci	1	AGEC 120 - Agricultural Econ and Agribus	3
Option A or B	3	<sup>or</sup> ECON 120 - Prin of Microeconomics	3
		Option A or B	6
	<b>14</b>		<b>16</b>
<b>Sophomore</b>			
CHM 230 - Chemistry II	4	BIOL 455 - General Microbiology	4
COMM 105 - Public Speaking IA	2	<sup>S</sup> GRSC 310 - Materials Handling	3
ENGL 200 - Expository Writing II	3	<sup>S</sup> GRSC 500 - Milling Science I	2
<sup>F</sup> GRSC 210 - CAD Flow Sheets for Grain Proc	3	<sup>S</sup> GRSC 501 - Milling Science I Lab	2
MATH 220 - Analytic Geom and Calculus I	4	Option A or B	6
	<b>16</b>		<b>17</b>
<b>Junior</b>			
<sup>F</sup> GRSC 502 - Milling Science II	2	ACCTG 231 - Accounting for Bus Opr	3
<sup>F</sup> GRSC 503 - Milling Science II Lab	2	<sup>S</sup> GRSC 625 - Flour and Dough Testing	3
<sup>F</sup> GRSC 591 - Internship in Grain Science	1	STAT 325 - Intro to Statistics	3
<sup>F</sup> GRSC 602 - Cereal Science	3	Option A or B	6
<sup>F</sup> GRSC 635 - Baking Science I	2		
<sup>F</sup> GRSC 636 - Baking Science I Lab	2		
Option A or B	5		
	<b>17</b>		<b>15</b>
<b>Senior</b>			
Communication Elective	3	<sup>S</sup> GRSC 651 - Food and Feed Product Prot	4
Management Elective	3	Option A or B	12
Option A or B	12		
	<b>18</b>		<b>16</b>

<sup>F</sup> Fall only, <sup>S</sup> Spring only.

**Graduation requirement: Minimum of 129 credits**

### **K-State 8 General Education requirements:**

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

MSM 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.

### **OPTION A - OPERATIONS**

AGRON 340 - Grain Grading.....	2
BIOCH 265 - Introductory Organic and Biochemistry.....	5
<sup>or</sup>	
CHM 350 - General Organic Chemistry.....	3
and	
CHM 351 - General Organic Chemistry Laboratory.....	2
<sup>S</sup> GRSC 405 - Grain Analysis Techniques.....	2
<sup>S</sup> GRSC 540 - Process Calculations in Food Systems.....	3
<sup>S</sup> GRSC 555 - Cereal Food Plant Design.....	3
<sup>F</sup> GRSC 556 - Pneumatic Conveying of Dry Solids.....	2
<sup>S</sup> GRSC 560 - Electricity and Industrial Power Distribution.....	3
<sup>S</sup> GRSC 580 - Advanced Flow Sheets.....	2
<sup>F</sup> GRSC 584 - Milling Processing Technology Management.....	3
PHYS 113 - General Physics I.....	4
PHYS 114 - General Physics II.....	4
Free Elective.....	3
Social Sciences and Humanities.....	9
Specialization Electives.....	5
<b>Total.....</b>	<b>50</b>

### **OPTION B – CHEMISTRY**

BIOCH 521 - Gen. Biochem.....	3
BIOCH 522 - Gen. Biochem Lab.....	2
<sup>S</sup> CHM 500 - Gen. Phys. Chem.....	3
CHM 531 - Organic Chem. I.....	3
CHM 532 - Organic Chem. I Lab.....	2
CHM 550 - Organic Chem. II.....	3
<sup>F</sup> FDSCI 727 - Chemical Methods.....	2
MATH 221 - Calculus II.....	4
PHYS 213 - Engineering Physics I.....	5
PHYS 214 - Engineering Physics II.....	5
<i>Choose one:</i>	
<sup>S</sup> GRSC 555 - Cereal Food Plant Design.....	3
<sup>F</sup> GRSC 556 - Pneumatic Conveying of Dry Solids.....	2
<sup>S</sup> GRSC 580 - Advanced Flow Sheets.....	2
<sup>F</sup> GRSC 584 - Milling Processing Technology Management.....	3
Free Elective.....	3
Social Sciences and Humanities.....	6
Specialization Electives.....	6-7
<b>Total.....</b>	<b>50</b>

**Communication electives (choose one):**

AGCOM 400 - Agricultural Business Communications ..... 3  
<sup>1,3</sup>COMM 311 - Business and Professional Speaking ..... 3  
ENGL 516 - Written Communication for the Sciences..... 3

**Management electives (choose one):**

<sup>3,6</sup>GRSC 530 - Management Applications in Grain Processing Industries..... 3  
MANGT 420 - Management Concepts ..... 3  
<sup>5</sup>MANGT 530 - Industrial and Labor Relations..... 3  
<sup>6</sup>MANGT 531 - Human Resources Management ..... 3

**Specialization electives:**

ACCTG 231 - Accounting for Business Operations (C) ..... 3  
ACCTG 241 - Accounting for Investing and Financing (both) ..... 3  
ACCTG 331 - Intermediate Accounting Processes (OP) ..... 3  
AGEC 318 - Food and Agribusiness Management (both) ..... 3  
AGEC 420 - Commodity Futures (both) ..... 3  
AGEC 500 - Production Economics (C) ..... 3  
AGEC 513 - Agricultural Finance (both) ..... 3  
AGEC 515 - Food and Agribusiness Marketing (both) ..... 3  
<sup>3</sup>AGEC 520 - Market Fundamentals and Futures/Options Trading (both) ..... 3  
<sup>4,5</sup>AGEC 632 - Agribusiness Logistics (both) ..... 3  
AGRON 340 - Grain Grading (C) ..... 2  
CHM 371 - Chemical Analysis (OP) ..... 4  
<sup>4</sup>GRSC 491 - Faculty-Led Study Abroad (both) ..... 1-3  
GRSC 499 - Undergraduate Research in Grain Science (both) ..... 0-3  
<sup>3,6</sup>GRSC 530 - Management Applications in Grain Processing Industries (both) ..... 3  
GRSC 540 - Process Calculations in Food Systems (C) ..... 3  
GRSC 541 - Process Calculations in Food Systems Laboratory (both)..... 1  
GRSC 555 - Cereal Food Plant Design (C) ..... 3  
GRSC 556 - Pneumatic Conveying of Dry Solids (C) ..... 2  
GRSC 560 - Electricity and Industrial Power Distribution (C)..... 3  
GRSC 580 - Advanced Flow Sheets (C) ..... 2  
GRSC 584 - Milling Processing Technology Management (C) ..... 3  
GRSC 592 - Extended Internship in Grain Science (both) ..... 1  
GRSC 615 - Animal Food Safety (both) ..... 3  
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  
<sup>6</sup>LEAD 212 - Introduction to Leadership Concepts (both)..... 2-3  
<sup>4,6</sup>LEAD 350 - Culture and Context in Leadership (both)..... 3  
<sup>3</sup>MANGT 390 - Business Law I (both)..... 3  
MANGT 420 - Management Concepts (both)..... 3  
<sup>5</sup>MANGT 530 - Industrial and Labor Relations (both) ..... 3  
<sup>6</sup>MANGT 531 - Human Resources Management (both) ..... 3

(C) Chemistry option  
(OP) Operations option  
(both) Both options

**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 one or two of the K-State 8 areas: <http://www.k-state.edu/kstate8/lists/>