

# GRAIN SCIENCE AND INDUSTRY

Five-year starting salary average

**\$50k–\$60k**

**100%**  
job placement  
during last five  
years

**\$80k**  
in scholarships  
within the major

**KANSAS STATE UNIVERSITY** | Department of  
Grain Science and Industry

## Bakery science and management

### RISING TO THE CHALLENGE

The demand for high-quality baked goods continues to grow. For more than 50 years, Kansas State University has worked closely with industry to satisfy the evolving tastes and demands of today's consumers.

K-State is the only university in the U.S. offering a four-year Bachelor of Science degree in bakery science and management. Each year, a new batch of educated, well-trained graduates enters the grain-based food industries of the 21st century.

In coming years, the needs and tastes of consumers will continue to create new challenges, and our graduates will be in every corner of the world, continuing to rise to the challenge.

### APPLY NEW KNOWLEDGE

At K-State, you will have opportunities to apply classroom learning in professional-grade laboratories and various analytical labs for testing ingredients, dough and finished products. You will begin by learning basic principles of baking from our expert faculty your first semester in the program. You also will take general courses in humanities, sciences, mathematics and business.

Within the first two years in the program, you will choose an emphasis option in either cereal chemistry or production management. You will have the first opportunity to intern with a baking company. This allows you to demonstrate your skills and knowledge while witnessing firsthand how classroom and laboratory knowledge translate to real-world business.

### MAKING 'DOUGH' IN THE REAL WORLD

With this degree, you will likely receive multiple job offers with high starting salaries. Large- and small-scale commercial bakeries, restaurants, commissaries, ingredient and food manufacturers, and testing laboratories are just a handful of local, national and international companies competing for our graduates.

**Graduates in the cereal chemistry option may select a more technical career, such as:**

- Quality control
- Sanitation
- Laboratory analysis
- Food safety
- Nutrition

**Production management graduates may select more of an operations career in:**

- Sales and marketing
- Purchasing
- Product development
- Plant management

### FACILITIES

K-State's laboratories include a modern pilot-scale bakery, a flour mill and food extrusion laboratory and analytical equipment with flour and dough testing capabilities.

### BAKERY SCIENCE CLUB

K-State's bakery science club meets once a week to produce baked products, which are then sold to raise money for club activities. Many members attend conventions in exciting cities such as Chicago and Las Vegas allowing them to meet industry contacts, attend seminars and observe demonstrations of the latest in baking equipment technology.

## SUGGESTED COURSE WORK

### CEREAL CHEMISTRY OPTION

#### FRESHMAN

##### HRS. FALL SEMESTER

4	BIOL 198	Principles of Biology
4	CHEM 210	Chemistry I
2	COMM 105	Public Speaking
1	GRSC 100	GSI Orientation
3	GRSC 101	Intro to GSI
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##### HRS. SPRING SEMESTER

4	CHEM 230	Chemistry II
3	ECON 110	Principles of Macroeconomics
3	ENGL 100	Expository Writing
3	GRSC 150	Principles of Milling
4	MATH 220	Analytic Geometry and Calculus I
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#### SOPHOMORE

##### HRS. FALL SEMESTER

4	BIOL 455	General Microbiology
3	CHM 531	Organic Chemistry I
4	MATH 221	Analytic Geometry and Calculus II
3	ENGL 200	Expos II
3	Free electives	
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##### HRS. SPRING SEMESTER

4	ACCTG 231	Accounting for Business Operations
3	BIOCH 521	General Biochemistry
2	BIOCH 522	General Biochemistry Lab
2	CHM 532	Organic Chem Lab
3	GRSC 310	Materials Handling
3	STAT 325	Statistics
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#### JUNIOR

##### HRS. FALL SEMESTER

3	CHM 550	Organic Chemistry II
3	FDSCI 600	Food Micro
1	FDSCI 601	Food Micro Lab
3	GRSC 602	Cereal Science
2	GRSC 635	Baking Science I
2	GRSC 636	Baking Science I Lab
3	Specialization electives	
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##### HRS. SPRING SEMESTER

1	GRSC 601*	AIB Practicum
3	GRSC 625	Flour and Dough
3	GRSC 637	Baking Science II
1	GRSC 638	Baking Science II Lab
5	PHYS 213	Eng. Physics I
3	Specialization Electives	
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#### SENIOR

##### HRS. FALL SEMESTER

3	AGCOM 400	Agricultural Business Communications
or		
3	ENGL 516	Written Communications for the Sciences
2	FDSCI 727	Chemical Methods of Food Analysis
2	GRSC 591	Commercial Feed and Food Manufacturing Internship
3	HN 132	Human Nutrition
5	PHYS 214	Engineering Physics II
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##### HRS. SPRING SEMESTER

3	CHM 500	General Physical Chemistry
3	FDSCI 501	Food Chemistry
4	GRSC 651	Food and Feed Product Production
1	GRSC 670	Bakery Layout
1	GRSC 601*	AIB Practicum II
3	Social science electives	
1	Specialization elective	
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### PRODUCTION MANAGEMENT OPTION

#### FRESHMAN

##### HRS. FALL SEMESTER

4	BIOL 198	Principles of Biology
3	ECON 110	Principles of Macroeconomics
3	ENGL 100	Expository Writing I
1	GRSC 100	GSI Orientation
3	GRSC 101	Introduction to Grain Science and Industry
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##### HRS. SPRING SEMESTER

4	CHM 210	Chemistry I
3	ENGL 200	Expo Writing II
2	COMM 106	Public Speaking
3	GRSC 150	Principles of Milling
1	GRSC 151	Principles of Milling Lab
3	MATH 205	General Calculus and Linear Algebra
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#### SOPHOMORE

##### HRS. FALL SEMESTER

3	AGEC 120	Agricultural Economics and Agribusiness
or		
3	ECON 120	Microeconomics
4	CHM 230	Chemistry II
3	GRSC 210	CAD Flow Sheets for Grain Processes
4	PHYS 113	General Physics I
3	STAT 325	Introduction to Statistics
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##### HRS. SPRING SEMESTER

3	ACCTG 231	Accounting for Business Operations
5	BIOCH 265	Biochemistry
or		
3	CHM 350	General Organic Chemistry
and		
2	CHM 351	General Organic Chemistry Lab
4	BIOL 455	General Microbiology
3	GRSC 310	Materials Handling
4	PHYS 114	General Physics II
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#### JUNIOR

##### HRS. FALL SEMESTER

3	AGCOM 400	Ag Business Communications
or		
3	ENGL 516	Written Communication
3	FDSCI 600	Food Microbiology
1	FDSCI 601	Food Microbiology Lab
3	GRSC 602	Cereal Science
2	GRSC 635	Baking Science I
2	GRSC 636	Baking Science I Lab
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##### HRS. SPRING SEMESTER

3	FDSCI 305	Fundamentals of Food Processing
1	GRSC 601	AIB Practicum I
4	GRSC 651	Food and Feed Product Production
3	GRSC 637	Baking Science II
1	GRSC 638	Baking Science II Lab
3	Business electives	
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#### SENIOR

##### HRS. FALL SEMESTER

2	GRSC 591	Commercial Feed and Food Manufacturing Internship
3	HN 132	Basic Nutrition
3	MANGT 420	Management Concepts
3	GRSC 630	Management Applications
3	Business Electives	
3	Specialization Electives	
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##### HRS. SPRING SEMESTER

3	GRSC 540	Engineering Applications to Grain/Food Products
1	GRSC 541	Engineering Applications to Grain/Food Products Lab
3	GRSC 625	Flour and Dough Testing
1	GRSC 670	Bakery Layout
1	GRSC 601	AIB Practicum II
3	Business Electives	
3	Free Electives	
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\*January intersession: One week training at AIB. Must be taken once in the junior year and again in the senior year.

#### BAKERY SCIENCE MINOR

Grain science majors cannot use courses required in their major as part of bakery science minor.

##### HRS.

3	GRSC 101	Introduction to Grain Science and Industry
3	GRSC 603	Cereal Science
3	GRSC 625	Flour and Dough Testing
2	GRSC 635	Baking Science I
2	GRSC 636	Baking Science I Laboratory
3	GRSC 637	Baking Science II
1	GRSC 638	Baking Science II Laboratory
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#### ELECTIVES

##### SPECIAL ELECTIVES

1	GRSC 201	Fundamental Baking Calculations
0-3	GRSC 499	Undergraduate Research in Grain Science
2	GRSC 500	Milling Science I
2	GRSC 501	Milling Science I Laboratory
3	GRSC 540	Eng. Applications in Food/Grain Ind
1	GRSC 541	Engineering applications in Food/Grain Ind. Lab 1
3	GRSC 560	Elec./Grain Proc.
4	GRSC 620	Extrusion Proc. Fd & Fd
1-3	GRSC 691	Faculty Led Study Abroad
1-2	GRSC 712	Vibrational Spectroscopic Analysis and Chemometrics
1	GRSC 713	Contemporary Chromatographic Analysis of Food
3	GRSC 745	Fund. of Bio-processing
2	LEAD 212	Intro to Lead concepts
2	FDSCI 690	Principles of HACCP

#### BUSINESS ELECTIVES (NINE HOURS REQUIRED)

3	ACCTG 241	Acct. for Invest & Fin
4	ACCTG 331	Proc. And Controls
3	AGEC 500	Production Economics
3	AGEC 515	Food & Agric Bus Mktg
3	FINAN 450	Intro to Finance
3	IMSE 501	Industrial Management
1	MANGT 300	Intro to TQM
3	MANGT 530	Industrial Relations
3	MKTG 400	Marketing
3	MKTG 542	Professional Selling

#### K-STATE 8 GENERAL EDUCATION REQUIREMENTS:

**BBSM-PM:** Students who first enroll in summer 2011 or later must meet the requirements of the K-State 8 General Education Program. To complete the K-State 8 requirements in this program, one free elective must come from the classes listed as "Aesthetic Experience and Interpretive Understanding". To complete a Business Minor, the following courses must be taken: ACCTG 231, ACCTG 241, MANGT 420, MKTG 400 and FINAN 450. Note that ACCTG 231 and MANGT 420 are already part of the core requirements; ACCTG 241, MKTG 400 and FINAN 450 must be taken as Business Elective.

**BBSM-CC:** Students who first enroll in summer 2011 or later must meet the requirements of the K-State 8 General Education Program. To complete the K-State 8 requirements in this program, one free elective must come from the classes listed as "Aesthetic Experience and Interpretive Understanding". Students also must take LEAD 212 to fulfill "Historical Perspectives" and Human Diversity within the U.S.; requirements. Students must additionally choose one extra class from the "Ethical Reasoning and Responsibility" list.

#### For more information about bakery science, contact:

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#### For more information about Kansas State University, contact:

Office of Admissions  
Kansas State University  
119 Anderson Hall  
Manhattan, KS 66506-0102  
800-432-8270 (toll free) or  
785-532-6250  
k-state@k-state.edu  
k-state.edu/admissions

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