

GRAIN SCIENCE AND INDUSTRY

\$80k
in scholarships
within the major

100%
job placement
during last five
years

Five-year starting salary average

\$50k–\$60k

KANSAS STATE UNIVERSITY | Department of
Grain Science and Industry

AT THE GRINDSTONE

For more than 100 years, Kansas State University has provided the world with unparalleled expertise in flour milling. Today, we offer the nation's only four-year Bachelor of Science degree in milling.

Flour milling and grain processing have changed tremendously in the past century – and so have we. Our department is on the forefront of new technologies and techniques, and we will continue to lead the way.

APPLY NEW KNOWLEDGE

As a student in our program, you will engage in both classroom and laboratory learning throughout your study. From day one, you will learn basic principles of flour milling and grain processing from our experienced faculty, as well as take general courses in humanities, science, mathematics and business.

Within your first two years in the program, you will choose an emphasis option in either cereal chemistry or operations. You can apply your new knowledge with laboratory work in our

Milling science and management

pilot-scale flour mill with commercial equipment. You will have an opportunity to intern with a flour milling or grain processing company. This allows you to expand your skills and knowledge while witnessing firsthand how classroom and laboratory knowledge translate to real-world business.

SIFTING THROUGH CAREER OPTIONS

You will have an opportunity to intern with a flour milling or grain processing company. Major corporations such as ADM, Ardent Mills, General Mills, Inc. and Quaker come to campus to compete for our students. As a graduate, you will likely receive competing job offers with high starting salaries.

You will have numerous opportunities in your career once you graduate, including:

- Plant manager
- Milling operations manager
- Head miller
- Production engineer
- Grain purchaser
- Quality control manager

WHERE YOU'LL LEARN

The K-State campus houses laboratory and pilot-scale mills with commercial equipment where you will apply classroom learning in the milling of wheat and other grains. The Hal Ross Flour Mill is a state-of-the-art facility built by the industry for preparation and training of students.

We are excited about K-State's new O.H. Kruse Feed Technology Innovation Center, which includes classrooms, labs and invaluable training opportunities for students.

MILLING SCIENCE CLUB

The milling science club mills and sells flour to help raise money for club activities. Flour products are available to the public at the Call Hall Dairy Bar and include regular bleached and enriched white flour, unbleached and enriched white flour, whole wheat flour and pastry flour. The organization coordinates presentations featuring guest speakers from the milling industry as well as social events. Members attend professional conferences and regularly donate flour to community food banks.

SUGGESTED COURSE WORK

MILLING SCIENCE AND MANAGEMENT

(Minimum of 129 credits)

FRESHMAN

HRS. FALL SEMESTER (14 credits)

- 4 BIOL 198 Principle of Biology
- 3 ENGL 100 Expository Writing I
- 1 GRSC 100 Grain Science Orientation
- 3 GRSC 101 Intro to Grain Science and Industry
- 3 Option A or B

HRS. SPRING SEMESTER (17 credits)

- 4 CHM 210 Chemistry I
- 3 ECON 110 Principles of Macro Econ
- 2 GRSC 150 Principles of Milling
- 1 GRSC 151 Principles of Milling Lab
- 4 MATH 220 Calculus I
- 3 Option A or B

SOPHOMORE

HRS. FALL SEMESTER (18 credits)

- 4 CHM 230 Chemistry II
- 3 AGECE 120 Agriculture Economics and Agriculture Business
- 2 COMM 105 Public Speaking
- 3 ENGL 200 Expository Writing II
- 3 GRSC 210 Flow Sheets
- 3 Option A or B

HRS. SPRING SEMESTER (16 credits)

- 3 GRSC 310 Material Handling
- 2 GRSC 500 Milling Science I
- 2 GRSC 501 Milling Science I Lab
- 9 Option A or B

JUNIOR

HRS. FALL SEMESTER (17 credits)

- 4 BIOL 455 General Microbiology
- 2 GRSC 502 Milling Science II
- 2 GRSC 503 Milling Science II Lab
- 3 GRSC 602 Cereal Science
- 3 STAT 325 Elementary Statistics
- 3 Option A or B

HRS. SPRING SEMESTER (15 credits)

- 3 ACCTG 231 Accounting Business Operations
- 3 GRSC 625 Flour and Dough Testing
- 9 Option A or B

SENIOR

HRS. FALL SEMESTER (16 credits)

- 3 GRSC 584 Mill Processing Technology Management
- 3 GRSC 630 Management Applications in the Grain Processing Industries
- 2 GRSC 635 Bakery Science I
- 2 GRSC 636 Bakery Science I Lab
- 6 Option A or B

HRS. SPRING SEMESTER (16 credits)

- 4 GRSC 651 Food and Feed Product Protection
- 12 Option A or B

OPTION A: OPERATIONS (48 credits)

- 2 AGRON 340 Grain Grading
- 5 BIOCH 265 Intro. Organic & Biochem
- or
- 3 CHM 350 General Organic Chemistry and
- 2 CHM 351 General Organic Chemistry Laboratory
- 2 GRSC 405 Grain Analysis Techniques
- 3 GRSC 540 Engineering Applications in Food/Grain Processing
- 1 GRSC 541 Engineering Applications in Food/Grain Processing Lab

- 3 GRSC 560 Electricity and Its Control for the Grain Processing Industry
- 2 GRSC 580 Advanced Flow Sheets
- 3 GRSC 655 Cereal Food Plant Design & Construction
- 2 GRSC 656 Pneumatic Conveying
- 4 PHYS 113 General Physics I
- 4 PHYS 114 General Physics II
- 3 Free elective
- 9 Social science electives
- 5 Specialization electives

OPTION B: CEREAL CHEMISTRY (48 credits)

- 3 BIOCH 521 General Biochemistry
- 2 BIOCH 522 General Biochemistry Lab
- 3 CHM 500 General Physics Chemistry
- 3 CHM 531 Organic Chemistry I
- 2 CHM 532 Organic Chemistry I Lab
- 3 CHM 550 Organic Chemistry II
- 2 FDSCI 727 Chemical Methods
- 4 MATH 221 Calculus II
- 5 PHYS 213 Engineering Physics I
- 5 PHYS 214 Engineering Physics II
- 3 Free elective
- 6 Social electives
- 7 Specialization electives

SPECIALIZATION ELECTIVES

- 3 ACCTG 231 Accounting for Business Operations (Chemistry Option)
- 3 ACCTG 241 Accounting Invest and Finance
- 4 ACCTG 331 Accounting Processes and Controls (Opr Opt)
- 3 AGECE 318 Food and Agribusiness Management
- 3 AGECE 420 Commodity Futures
- 3 AGECE 500 Production Economics
- 3 AGECE 513 Agricultural Finance
- 3 AGECE 515 Food and Agribusiness Marketing
- 3 ¹AGECE 520 Market Fundamentals and Futures/Options Trading
- 3 ²AGECE 632 Agribusiness Logistics
- 2 AGRON 340 Grain Grading (Chemistry Option)
- 4 CHM 371 Chemical Analysis
- 3 ³COMM 311 Business and Professional Speaking
- 3 ENGL 516 Written Communication for the Sciences
- 1 GRSC 201 Fundamental Baking Calculations
- 0-3 GRSC 499 Undergraduate research in Grain Science
- 3 GRSC 560 Electricity and Its Control for the Grain Processing Ind (Chemistry Option)
- 3 GRSC 580 Advanced Flow Sheets (Chemistry Option)
- 4 GRSC 620 Extrusion Processing in the Food and Feed Industries
- 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 Fundamentals of Bioprocessing
- 3 ⁴MANGT 390 Business Law I
- 3 MANGT 420 Management Concepts
- 3 ⁵MANGT 530 Industrial and Labor Relations
- 3 ⁶MANGT 531 Human Resources Management

¹Ethical Reasoning and Responsibility

²Historical Perspectives

³Aesthetic Experience and Interpretive Understanding and Ethical Reasoning and Responsibility

⁴Ethical Reasoning and Responsibility

⁵Historical Perspectives

⁶Human Diversity within the U.S.

Please check k-state.edu/kstate8/lists for a complete list of courses tagged for one or two of the K-State 8 areas.

K-STATE 8 GENERAL EDUCATION REQUIREMENTS

BMSM-CH, BMSM-OP

Students who first enroll in summer 2011 or later must meet the requirements of the K-State 8 general education program. MSM curriculum fulfills only five of the K-State 8 requirements. Advisors and students need to make the right course choices for free, social and specialization electives to satisfy the remaining K-State 8 requirements (i.e. Historical Perspectives; Human Diversity within the U.S.; Aesthetic Experience and Interpretive Understanding).



For more information about milling science, contact:

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