

Status: PENDING

**PROGRAM REQUEST**  
Meat Science

Last Updated: Pfister, Jill Ann  
01/14/2011

<b>Fiscal Unit/Academic Org</b>	Animal Sciences - D1132
<b>Administering College/Academic Group</b>	Food, Agric & Environ Science
<b>Co-administering College/Academic Group</b>	
<b>Semester Conversion Designation</b>	New Program/Plan
<b>Proposed Program/Plan Name</b>	Meat Science
<b>Type of Program/Plan</b>	Undergraduate bachelors degree program or major
<b>Program/Plan Code Abbreviation</b>	MEATSCI
<b>Proposed Degree Title</b>	Bachelor of Science in Meat Science

**Credit Hour Explanation**

Program credit hour requirements		A) Number of credit hours in current program (Quarter credit hours)	B) Calculated result for 2/3rds of current (Semester credit hours)	C) Number of credit hours required for proposed program (Semester credit hours)	D) Change in credit hours
Total minimum credit hours required for completion of program				37	
Required credit hours offered by the unit	Minimum			20	
	Maximum			23	
Required credit hours offered outside of the unit	Minimum			17	
	Maximum			17	
Required prerequisite credit hours not included above	Minimum			0	
	Maximum			3	

**Program Learning Goals**

Note: these are required for all undergraduate degree programs and majors now, and will be required for all graduate and professional degree programs in 2012. Nonetheless, all programs are encouraged to complete these now.

Status: PENDING

**PROGRAM REQUEST**  
Meat Science

Last Updated: Pfister, Jill Ann  
01/14/2011

**Program Learning Goals**

- Personal Character & Professional Growth
  - A. Demonstrate citizenship and social responsibility
  - B. Develop global awareness and appreciate diversity
  - C. Utilize common sense and logic
  - D. Continue the pursuit of knowledge
- Technical and Life Skills
  - A. Communicate effectively, both orally and in writing
  - B. Solve problems by integrating knowledge, logic and experiences
  - C. Contribute to wholesome, healthful, and sustainable food production
- Knowledge Base
  - 1. Business
    - a. Understand economic principles and business structures
    - b. Investigate value-adding strategies and supply chain management
  - 2. Muscle Physiology
    - a. Appreciate influences of animal growth & development on raw material (fresh meat) quality, price, and availability
    - b. Comprehend muscle structure & function and the postmortem conversion of muscle to meat
  - 3. Food Safety & Product Development
    - a. Be able to apply the principles of microbiology to:
      - ensure wholesomeness (control pathogenic organisms)
      - extend shelf-life (control spoilage organisms), and
      - produce further processed products
  - 3. Food Safety & Product Development
    - b. Have a working knowledge of the techniques, technology, and regulations associated with harvesting, processing, packaging, and labeling of meat products

**Assessment**

Assessment plan includes student learning goals, how those goals are evaluated, and how the information collected is used to improve student learning. An assessment plan is required for undergraduate majors and degrees. Graduate and professional degree programs are encouraged to complete this now, but will not be required to do so until 2012.

Is this a degree program (undergraduate, graduate, or professional) or major proposal? Yes

Does the degree program or major have an assessment plan on file with the university Office of Academic Affairs? No

**DIRECT MEASURES (means of assessment that measure performance directly, are authentic and minimize mitigating or intervening factors)**

**Classroom assignments**

- Embedded testing (i.e. specific questions in homework or exams that allow faculty to assess students' attainments of a specific learning goal)

**Evaluation of a body of work produced by the student**

- Capstone course reports, papers, or presentations

**INDIRECT MEASURES (means of assessment that are related to direct measures but are steps removed from those measures)**

**Surveys and Interviews**

- Student evaluation of instruction

Status: PENDING

**PROGRAM REQUEST**  
Meat Science

Last Updated: Pfister, Jill Ann  
01/14/2011

**Additional types of indirect evidence**

- Curriculum or syllabus review

**USE OF DATA (how the program uses or will use the evaluation data to make evidence-based improvements to the program periodically)**

- Make improvements in curricular requirements (e.g., add, subtract courses)
- Make improvements in course content
- Make improvements in course delivery and learning activities within courses
- Make improvements in learning facilities, laboratories, and/or equipment

**Program Specializations/Sub-Plans**

If you do not specify a program specialization/sub-plan it will be assumed you are submitting this program for all program specializations/sub-plans.

**Pre-Major**

Does this Program have a Pre-Major? No

**Attachments**

- AS Programs Q2S Cover Letter.pdf  
*(Letter from Program-offering Unit. Owner: Zerby, Henry Nevin)*
- Meat Science Concurrence FS.pdf  
*(Support/Concurrence Letters. Owner: Zerby, Henry Nevin)*
- Meat Science Program Review.pdf  
*(Program Proposal. Owner: Zerby, Henry Nevin)*

**Comments**

- Will need MEATSCI added as a book 3 heading for courses in the Meat Science Program. *(by Zerby, Henry Nevin on 12/30/2010 11:56 AM)*

**Workflow Information**

Status	User(s)	Date/Time	Step
Submitted	Zerby, Henry Nevin	11/29/2010 04:43 PM	Submitted for Approval
Approved	Osborne, Jeanne Marie	12/02/2010 05:29 PM	Unit Approval
Revision Requested	Pfister, Jill Ann	12/29/2010 02:09 PM	College Approval
Submitted	Zerby, Henry Nevin	12/30/2010 11:56 AM	Submitted for Approval
Approved	Zerby, Henry Nevin	12/30/2010 11:57 AM	Unit Approval
Approved	Pfister, Jill Ann	01/14/2011 04:49 PM	College Approval
Pending Approval	Soave, Melissa A	01/14/2011 04:49 PM	CAA Approval



## Department of Animal Sciences

---

Office of the Chair  
2029 Fyffe Road  
Columbus, OH 43210-1095

Phone (614) 292-3232  
Fax (614) 292-2929  
E-mail kinder.15@osu.edu

December 1, 2010

Office of Academic Affairs  
203 Bricker Hall  
190 North Oval Mall  
Columbus, OH 43210-1358

Dear Office of Academic Affairs,

On behalf of the faculty of the Department of Animal Sciences, I am pleased to share our proposed transition plan for our curriculum for a quarter based system to a semester based system as well as the transition plans for the students who will be enrolled during the transition. The faculty embraced this as an opportunity to revise the entire Animal Sciences curriculum. The Department semester conversion process was led by Associate Professor Henry Zerby, Chair of the Academic Affairs Committee and Professor Michael Day, Chair of the Graduate Studies Committee. Jeanne Osborne, who provided staff support for the Q2S process attended the UCAT Winter Curriculum Design Institute to gain additional information regarding curriculum mapping, learning goal development and curriculum assessment. The Departmental Academic Affairs Committee initiated the discussions in the Fall of 2009 and then an Ad-hoc Q2S committee, comprised of five faculty members, was developed in early 2010 to champion the cause. The Departmental Ad-hoc committee that addressed the quarter-to-semester conversion utilized the following guiding principles:

- 1) Collect input from stakeholders and students regarding the current needs of graduates entering the work place or pursuing advanced degrees
- 2) Refine the learning goals
- 3) Establish or revise as necessary the curriculum to meet the learning goals while simultaneously advancing the knowledge and skills of our students
- 4) Develop an assessment plan that will allow us to monitor and enhance our programs

The Ad-hoc Committee began with the development of a timeline which would culminate in the submission of the program proposal to the College of Food, Agricultural, and Environmental Sciences, in October 2010. The Ad hoc Committee began by refining the existing Program Learning Goals and desired outcomes. A series of "brown bag" meetings was established and faculty, staff and students were invited to give input regarding learning goals and participate in a systematic discussion of the existing

curriculum and proposed changes. Simultaneously the curricula of peer semester institutions was obtained and reviewed. Meetings were also held with key Department stakeholders, including those from collaborating units on the Columbus campus and the Agricultural Technical Institute in Wooster, Ohio. Semester course design was assigned to members of the Ad-hoc committee, who collaborated with current instructors in the Department. The proposed curriculum was presented formally to the entire faculty at the June 2010 faculty meeting for discussion and was approved by the faculty at the September 2010 faculty meeting.

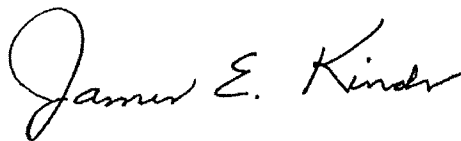
Notable changes to the program have been the development of tracks within the Animal Sciences major (Animal Biosciences Track, Animal Industries Track, and revision of the Veterinary Technology Track), and, via the cooperation of the Department of Food Science and Technology, the establishment of Meat Science as a stand-alone major for students interested in pursuing a muscle food products focus. Feedback obtained from stakeholders, former students, and current students also resulted in: incorporating additional emphasis on animal well-being, animal behavior, and the role of animals within our society within the introductory level Animal Science coursework; adding animal health and animal immunology courses to the core curriculum; and, incorporating global awareness throughout the curriculum and structuring the curriculum to provide additional opportunities for students to engage in study tours and study abroad experiences.

Thus, we are submitting proposals for the following programs:

- B.S. in Animal Sciences
- B.S. in Meat Science
- M.S. in Animal Sciences
- Ph.D. in Animal Sciences
- Minors:
  - Animal Science
  - Animal Nutrition
  - Equine Science
  - Animal Pre-Veterinary Medicine
  - Meat Science
- Certificate in Dairy Science

Thank you for your consideration of this program plan. Should you have any questions or need additional information, please do not hesitate to contact me.

Sincerely,



Professor and Chair  
Department of Animal Sciences



Food Science & Technology

110 Parker Hall  
2015 Fyffe  
Columbus, OH 43210

Phone (614) 292-7769  
E-mail mangino.2.osu.edu

December 2, 2010

Professor  
Animal Sciences

Dear Henry:

The Department of Food Science and Technology is in support of developing Meat Science as a stand alone major for a B.S. in Agriculture in the College of Food, Agricultural, and Environmental Sciences. We will support the major with the proposed courses from the Food Science curriculum.

We think that this major will be of benefit to your students who chose not to go to veterinary school and expect that many of our majors will elect to incorporate some of the proposed Meat Science courses into their technical electives.

Sincerely

A handwritten signature in cursive script that reads "Mike Mangino".

Mike Mangino  
Professor Emeritus & Interim Chair  
Department of Food Science & Technology

Proposal for a Meat Science Major in the  
College of Food, Agriculture, and Environmental Sciences

**Rationale:**

Meat Science incorporates different areas of study such as food safety, meat processing, product development, packaging technologies, growth and development, and animal welfare. Across all these areas are the underlying disciplines of nutrition, genetics, physiology, microbiology, and economics and marketing. Within the food industry there are extensive opportunities for employment in procurement, marketing, new product development, quality control, and supervisory and management positions. As a result of the past emphasis and rich history in Meat Science at The Ohio State University, there is a very large contingent of OSU Alumni involved in several meat companies at all levels of administration across the United States. While the current B.S. in Animal Science and/or Food Science allow students to take some meats science courses as electives, neither program provides the flexibility to properly train students with a specific interest in the meat industry. As the faculty who work in the area of meat science continue to receive multiple inquiries on a monthly basis for students graduating with an interest in the meat industry, coupled with the restructuring of both the Animal Sciences and Food Science curriculum, it is the opportune time to develop a major that suits the needs of the growing number of undergraduates with an interest in Meat Science.

The Meat Science major is a four-year undergraduate curriculum comprised mainly of existing courses in Animal Science, Food Science, with an emphasis in business/economics in the minor equivalent. This major was designed to allow students with the flexibility to pursue interest in the areas of: a) growth and development and fresh meat raw materials, b) meat processing and product development, c) food safety and quality assurance, or d) a combination of the aforementioned areas. As presented, students will explore several of the natural sciences, which are necessary to understand the pre- and postmortem physiology that impacts raw material quality. Students will also be required to have a background in microbiology as food safety impacts all partners in the supply food supply. Students will also explore the areas of USDA meat inspection, USDA grading, and product marketing.

During the past ten years the Animal Science Department has made a concerted effort to enhance the curriculum in the area of Meat Science. A group of faculty met in 2009 and developed an outline for the major. The outline was modified several times with input from undergraduate students, current graduate students focusing in the meat science, conversations with recent graduates who have entered the industry, and alumni and industry partners. In recent years we have placed as many as 10 to 20 students each year either in the industry, or in graduate programs pursuing advanced degrees in Meat Science. Additionally, the Department has multiple endowments, which support scholarships for students interested in pursuing Meat Science, and has recently hired an additional faculty person in the meats area with a significant teaching appointment (80%). With the current and growing interest in the Meat Science program coupled with additional recruiting and available scholarships, we anticipate that approximately 20 to 25 students per year graduate from this program during its first few years, with the enrollment growing to 40 to 50 students per year within five to six years. This will be the first Meat Science major in a land grant institution and will offer the most comprehensive undergraduate program for students interested in pursuing a career in the meat industry.

MEAT SCIENCE CURRICULUM MAP

	Personal Character & Professional Growth				Technical & Life Skills			Knowledge Base					
	A	B	C	D	A	B	C	1a	1b	2a	2b	3a	3b
MEATSCI 2010 Bar-B-Q Sci.		B	B	B		B	B	B	B	B		B	B
FST 2401 Intro to Food Processing Nutrition (ANIMSC 3130 or HUMNUT310)		B	B	B	B	B	B	B	B			B	B
ANIMSCI 3100 Growth & Development			I	I	I	I	I		I	I	I		I
MEATSCI 3110 Intro. Meat Sci		I	I	I	I	I	I	I	I	I	I	I	I
MEATSCI 3310 Anim and Carcass Eval.			I	I		I	I	I	I	I	I	I	I
ANIMSC 3700 Anim Research Meth. Lab			I	I	I	I					I	I	I
FST 5310 Food Quality Assurance	I		I	I		I	I					I	I
MEATSCI 4510 Processed Meats		I	I	I	I	I	I	I	I	I	I	I	I
MEATSCI 4710 Auditing	I		I	I	I	I	I		I	I		I	I
MEATSCI 4810 Meat Industry Tour	I	I	I	I	I	I	I	I	I	I	I	I	I
MEATSCI 5510 Advanced Meat Sci			A	A	A	A	A		A	A	A		A
FST 5536 Food Microbiology			A	A		A	A					A	A
MEATSCI 5810 Branded Meat Prod	A	A	A	A	A	A	A	A	A	A	A	A	A

B = Beginning level; I = Intermediate level; A = Advanced level

**Personal Character & Professional Growth**

- A. Demonstrate citizenship and social responsibility
- B. Develop global awareness and appreciate diversity
- C. Utilize common sense and logic
- D. Continue the pursuit of knowledge

**Technical and Life Skills**

- A. Communicate effectively, both orally and in writing
- B. Solve problems by integrating knowledge, logic and experiences
- C. Contribute to wholesome, healthful, and sustainable food production

**Knowledge Base**

*1. Business*

- a. Understand economic principles and business structures
- b. Investigate value-adding strategies and supply chain management

*2. Muscle Physiology*

- a. Appreciate influences of animal growth & development (nutrition, genetics, and environment) on raw material (fresh meat) quality, price, and availability
- b. Comprehend muscle structure & function and the postmortem conversion of muscle to meat

*3. Food Safety & Product Development*

- a. Be able to apply the principles of microbiology to:
  - ensure wholesomeness (control pathogenic organisms)
  - extend shelf-life (control spoilage organisms), and
  - produce further processed products (manage fermentation)
- b. Have a working knowledge of the techniques, technology, and regulations associated with harvesting, processing, packaging, and labeling of meat products



**B.S. in Agriculture**  
**Major: Meat Science**  
Effective Summer 2012

All students must complete two Global Issues courses in the GE. This requirement is the successor to the diamond/asterisk requirement. All students must complete a Social Diversity requirement in the GE by completing Rural Sociology 1500 or Sociology 101.

FAES 100 or USAS 100, etc	1	Rural Soc 1500 or Sociol 101	3
Writing Level 1 (English 110)	3	AED Econ 2001 or Econ 2001	3
Writing Level 2 (2367)	3	Historical Study	3
Agr Comm 3130 or Comm 321	3	Culture and Ideas or Historical Study	3
Math 1148 (College Algebra)	4	Literature	3
Data Analysis	3	Art	3
Biological Science (BIO 1114)	4	Contemporary Issues (3597)	3
Physical Science (Chem 1110)	5	Total GE	54-56
MICRO 509 (Option 1)	4	Major (including capstone)	37
Additional Science (Option 2)	3-5	Minor Equivalent	15
Anim Sci 3140 (3), Chem 1220 (5),		Internship	2
Chem 2310 (3), Entomol 1101 (3),		Free Electives	11-13
EEOB 235 (3)		Total	121

---

**Major** 37

Meat Science Core

ANIMSCI 3100	Intro. Animal & Growth Dev.	3
ANIMSCI 3130 or Hum Nut 310	Nutrition	3
ANIMSCI 3700	Animal Research Methods Laboratory	2
FDSCTE 2400	Introduction to Food Processing	3
FDSCTE 5310	Food Quality Assurance	3
FDSCTE 5536	Food Microbiology	3
MEATSCI 2010	Bar-B-Q Science	2
MEATSCI 3110	Introduction to Meat Science	3
MEATSCI 3310	Meat Animal and Carcass Evaluation	3
MEATSCI 4510	Processed Meats	3
MEATSCI 5510	Advanced Meat Science	3
MEATSCI 5810	Branded Meat Products (Capstone)	3

Elective Courses in Meat Science select at least three hours from: 3

MEATSCI 3410 (3) or 5310 (2) or 5410 (2) or FDSCTE 5450 (3) or 5546 (3)

**Minor Equivalent** 15

15 credits from groups A and B combined, with a minimum of 6 credits from each.

Group A

ANIMSCI 5100	Adv. Growth and Development	3
FABENG 3481	Food Engineering	3
FABENG 5630	Food Process Engineering	3
FDSCTE 5320	Food Law	3
FDSCTE 5330	Food Plant Management	3
FDSCTE 5430	Food Fermentations	3
FDSCTE 5450	Food Packaging (if not taken above)	3
FDSCTE 5546	Food Micro Lab (if not taken above)	3
FDSCTE 5600	Food Chemistry	3
FDSCTE 5610	Food Analysis	3
FDSCTE 5710	Food Additives	3
FDSCTE 5720	Food Product Development	3

Group B

AEDEcon 2105	Managerial Records & Analysis	3
AEDEcon 401 (or BUS-MHR 400)	Principles of Agribus. Mgmt.	3
AEDEcon 402 (or BUS-M&L 450)	Principles of Agribus. Mktg.	3
AEDEcon 403 (or BUS-FIN 420)	Principles of Agribus. Finance	3
AEDEcon 460	HR Mgmt. in Small Business	3
BUS-FIN 590	Entrepreneurial Finance	3
BUS-MHR 290	Entrepreneurship	3
BUS-MHR 390	Personal Creativity & Innovation	3
BUS-MHR 400	Foundations of Mgmt. & HR	3
BUS-M&L 490	Entrepreneurship Marketing	3

**RECOMMENDED COURSE PLAN FOR MEAT SCIENCE MAJORS**

**FIRST YEAR**

**Autumn Semester**

FAES 1000	1
MATH 148	4
ENGLISH 110	3
BIO 113	4
FST 2400	<u>3</u>
	15

**Spring Semester**

LIT OR ART	3
RURL SOC 105	3
CHEM 121	5
MEAT SCI 2010	2
Elective	<u>3</u>
	16

**SECOND YEAR**

**Autumn Semester**

3 <sup>RD</sup> SCI	3-5
AED ECON 200	3
ANIM SCI 3100	3
Data Analysis	3
MEATSCI 3310	<u>3</u>
	15-17

**Spring Semester**

AG COMM 3390	3
Nutrition	3
MEATSCI 3310	3
Minor	3
ANIMSCI LAB 3200	2
ANIMSCI 2367	<u>3</u>
	17

**THIRD YEAR**

**Autumn Semester**

HISTORY	3
INTERNSHIP	2
LIT OR ART	3
FST 5310	3
Elective	<u>3</u>
	14

**Spring Semester**

ANIMSCI 3700	2
Minor	3
CULT/ISSUE/HIST	3
FDSCTE 5536	2
FDSCTE 5546	3
Elective	<u>2-3</u>
	15-16

**FOURTH YEAR**

**Autumn Semester**

MEATSCI 4510	3
MEATSCI 5510	3
MEATSCI Elec	3
Minor	3
Elective	<u>2-3</u>
	14-15

**Spring Semester**

MEATSCI CAPSTONE3	
Minor	3
Minor	3
MEATSCI 5810	4
Elective	<u>2-3</u>
	15-16

**Minimum Credit Hours Required for B.S. 121**