THE OHIO STATE UNIVERSITY

College of Food, Agricultural, and Environmental Sciences

Room 100
2120 Fyffe Road
Columbus, OH 43210-1066

Phone (614) 292-6891
Fax (614) 292-1218

February 24, 2005

Randy Smith
210 Bricker Hall
190 North Oval Mall
CAMPUS

Dear Randy:

We are pleased to submit a proposal for a new minor in Meat Science. This new minor is designed according to the guidelines for developing, approving, and administering minors in the College of Food, Agricultural, and Environmental Sciences as approved by the Council on Academic Affairs in 1991, revised in 1998, and then again in 2005. The guidelines follow:

1. A minor should demonstrate depth; lower level to higher level courses (academic maturity); vertical rather than horizontal.
2. The subject matter area could include more than one Registrar's listing. Departments and subject matter area are not synonymous.
3. A rationale should be provided discussing why the courses have been selected for the minor.
4. A minor should consist of a minimum of 20 and, in general, a maximum of 25 credit hours, with at least half of those hours at the 300 level or above. No more than 5 hours of -93's (individual study) may be included.
5. When constructing the minor, academic units should carefully consider the effect of any prerequisites to courses listed as acceptable to the minor.
6. If a minor proposed to the College Committee on Academic Affairs includes courses from more than one Registrar's listing, the Committee will require a letter of concurrence from each department involved before approving the minor.
7. After approval by the Agriculture Committee on Academic Affairs, the minor will be forwarded to the University Office of Academic Affairs for assignment of a PERMACUN number if a number has not previously been assigned.
8. A student must declare a minor in an area of study other than the major.
9. The minor may allow an overlap of five hours between the minor and the GEC.
10. A minimum overall CPHR for courses comprising the minor shall be 2.00.
11. Courses taken on a pass/non pass basis may not be applied to the minor.

The College of Food, Agricultural, and Environmental Sciences Restrictions and General Information noted on the minor sheet are slightly different than those used by ASC. CFAES realizes that when ASC reviews the minor, they will use their Restrictions and General Information.

We request a permacun number for this minor, and it will be programmed into DARS so any student may select the minor except those majoring in Animal Sciences.

Thank you for your consideration.

Sincerely,

Jill A. Pfister
Assistant Dean, Academic Affairs,
and College Secretary

JAP/is
Enclosures

Proposal for a new minor in the College of Food, Agriculture, and Environmental Sciences

Introduction:
Meat Science is a relatively new area of study compared with many of the other disciplines offered within the College. Meat Science incorporates many different disciplines and areas: food safety and wholesomeness, further processing and product development, muscle physiology and growth and development. There is an abundance of job opportunities in the Meat Science area, especially with food production and food safety. 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 and we continually receive phone calls and e-mails from many of these alumni as well as request from employment recruiters from several companies seeking new hires on a weekly basis. During the past few years, the Department of Animal Sciences has hired three new faculty who have a teaching and research emphasis related to Meat Science to enhance the program of study in this area. This has resulted in an increased enrollment in classes both by animal science majors and non-majors.

Rationale:
The real thrust behind developing this proposal is from the repeated request by several students inquiring about the opportunity to have an emphasis in their curriculum in the area of Meat Science. In fact, students have often asked if they could major in Meat Science. Most students are not aware of this area of study as they enter the College. However, via experiences with introductory classes and via word of mouth many students develop an interest in learning more about the opportunities in muscle food production and food safety. Additionally, the mandatory requirement to complete an internship has increased the number of students seeking and gaining industry experience with meat processing and manufacturing companies, food safety inspection programs and federal meat grading programs. As a result of the revised undergraduate curriculum, increased interest from students, and the success of the internship programs we have had an increasing amount of graduates acquire jobs in the meat industry and/or pursue graduate programs in Meat Science.

Purpose:
The purpose of a Meat Science Minor is to:

1) Provide students with the knowledge of food products (safety, palatability, processing, etc.) as this information is useful for every-day decisions they will make in providing nourishment for them and their families.
2) Provide students with an opportunity to develop a further understanding of science and the interaction of all the different disciplines of science (Chemistry, Biology, Biochemistry, Economics, Genetics, Nutrition, etc.) and apply the fundamentals and principles they have learned.
3) Provide students that have pursued educational training within a specific skilled area (Food Science, Agricultural Education, Agricultural Business and Economics, Hospitality Management, etc.) with an opportunity to augment their curriculum with a food production and food safety emphasis to give them a competitive edge while seeking future employment.

Benefits for Students:
The benefits have been described in the previous sections. In summary, this minor would present students with the opportunity to receive credit for taking a series of classes of interest outside their major. This personal interest may stem from their family background and involvement in food animal production, their interest in employment with a specific type of industry position, for developing a home business, or may simply be the result of curiosity associated with meat products (i.e. how to prepare the perfect steak while tailgating in the shadow of the "the Shoe").

Curriculum:
The proposed curriculum is presented in the attached document. It has been intentionally developed to offer the students to tailor this minor to help support their specific desired outcome. A unique opportunity in this minor is the option to fulfill some of the elective credits via short courses that are offered on an annual basis by faculty in the Department of Animal Sciences and Food Science. These short courses provide flexibility in scheduling, are very current, and are designed for training industry professionals. Completion of a couple of these short courses could provide a distinctive advantage during an interview/hiring process for these students. A brief description of the content of the short courses is providing at the end of this document.

The following scenarios are provided as examples of the flexibility of this minor for students with differing interest in the meat related industries.
If a student were enrolled in the meat science minor to gain a better understanding of the meat industry and to be able to teach a section on meat products and meat judging for an FFA curriculum the student might choose the following classes to complete the minor:

Course	Credits
• Anim Sci 200 Introductory Animal Science	5
• Anim Sci 250 Food Animal Products	3
• Anim Sci 305 Meat Animal and Carcass Evaluation	3
• Anim Sci 355.01 Principles of Meat Science	3
• Anim Sci 355.02 Meat Science Products Laboratory	3
• Anim Sci 593 Individual Studies	
Lamb/Beef/Pork 509	2
Sausage/Processed Meat short courses	2

If the student's was interested in obtaining a better understanding of food safety for personal interest or for future employment opportunities in quality assurance they might choose the following classes:

Course	Credits
• Anim Sci 355.01 Principles of Meat Science	3
• Anim Sci 355.02 Meat Science Products Laboratory	3
• Anim Sci 413 Principles of Animal Health	5
• Microciol 509 Basic and Practical Microbiology	5
• Anim Sci 593 Individual Studies	
Introductory HACCP Training	2
Advanced HACCP Training	2
or	

Thermal Processing of RTE Meat Products

If the students were interested in the business and marketing aspects of the meat industry they might choose the following classes:

Course	Credits
• Anim Sci 200 Introductory Animal Science	5
• Anim Sci 250 Food Animal Products	3
• Anim Sci 305 Meat Animal and Carcass Evaluation	3
• Anim Sci 355.01 Principles of Meat Science	3
• Anim Sci 355.02 Meat Science Products Laboratory	3
• Anim Sci 555.03 Branded Meat Products	4

The minor can be tailored to provide additional experience for students with a wide variet of interest. It is an option for students who are interested in pursuing two minors such as a student with a pre-vet interest. This minor in addition to their life science minor may give them an advantage in gaining entrance in to a veterinary program. This minor will also be attractive to students outside the College, such as students with an interest in restaurant management, anatomy and muscle physiology, health sciences and microbiology, etc.

Recruiting of Students:

The minor will be advertised via list serves and to students within the college. The minor will also be advertised to students in microbiology, zoology, hospitality management, etc.

Enrollment Anticipated:

It is anticipated that the initial enrollment will be 10-15 students for the 1st two years with a gradual increase up to 20-30 students.

Description of Short Courses

Introductory HACCP Training for Meat and Poultry Processors

This is a 2-day course, and the curriculum covers the fundamental principles of HACCP (Hazard Analysis and Critical Control Points) and the process involved with developing and maintaining a HACCP program.

Advanced HACCP Training for Meat and Poultry Processors

This is a 2-day course that covers validation, verification and reassessment of HACCP plans.

Sausage/Processed Meats Course

This is a 2-day course that focuses on the functionality of raw materials and non-meat ingredients used to produce further processed ground and whole muscle meat products.

Thermal Processing of Ready-to-Eat Meat Products Short Course

This is a 3-day course that covers the technical and regulatory aspects of cooking, chilling and post-package handling of ready-to-eat meat products.

Beef, Sheep, and Pork 509 Programs (there is a separate program for each species)

This is a 3-day course designed to address factors associated with producing consistent, high quality, wholesome meat products starting with management practices at the farm and continuing through the packing-plant and retail levels.

T · H · E
OHIO
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Department of Microbiology

484 West 12th Avenue
Columbus, OH 43210-1292

Phone 614-292-2301
Fax 614-292-8120

18 February 2005

Dr. Henry Zerby
Department of Meat Science
122A Animal Science Building
2029 Fyffe Road
Columbus, OH 43210

Dear Dr. Zerby:

The Microbiology Department has received and reviewed your department's request to add Microbiology 509 to the Meat Science minor, and, given that the course is taught all four quarters and you anticipate only about 24 students needing the course in a given year, we see no problem meeting your needs. We do request, however, that you encourage students to take the course any quarter *other* than the Autumn, as we have almost 150 seats committed that quarter to Dental Hygiene and Nursing majors.

Thanks for your interest in Microbiology.

Sincerely,

Elizabeth (Betsy) Wrobel-Boerner
Program Coordinator

DRAFT
MEAT SCIENCE MINOR

College of Food, Agricultural, and Environmental Sciences
The Ohio State University

Henry Zerby, Minor Coordinator
122A Animal Science
2029 Fyffe Rd.
688-4584
zerby.8@osu.edu

A minor in Meat Science is for students who wish to develop a better understanding of meat and muscle as a food product. This minor will appeal to students with a general interest in food animal production and be especially helpful for those students who plan to work in food industries or any type of formal agricultural instruction/education settings. The minor is designed to provide students with a general understanding of food animal development with an increased focus on anatomy, muscle biology, meat processing, and food safety.

The Meat Science minor consists of 20 credit hours selected as follows:

Required: 6 hours		**Credit Hours**
ANIM SCI 355.01	Principles of Meat Science	3
ANIM SCI 355.02	Meat Science Products Laboratory	3

Electives: Select a minimum of 14 credit hours from the following classes
(required and elective courses in the minor must total 20 credit hours)

ANIM SCI 200	Introductory Animal Sciences	5
ANIM SCI 250	Food Animal Products	3
ANIM SCI 305	Meat Animal and Carcass Production	3
ANIM SCI 400	Animal Growth and Development	4
ANIM SCI 413	Principles of Animal Health	5
ANIM SCI 555.01	Advanced Meat Science	3
ANIM SCI 555.02	Meat Processing	4
ANIM SCI 555.03	Branded Meat Products	4
ANIM SCI 593	Individual Studies	2-4
ANIM SCI 618	Molecular Events in Tissue Growth and Development	4
MICROBIOL 509	Basic and Practical Microbiology	5

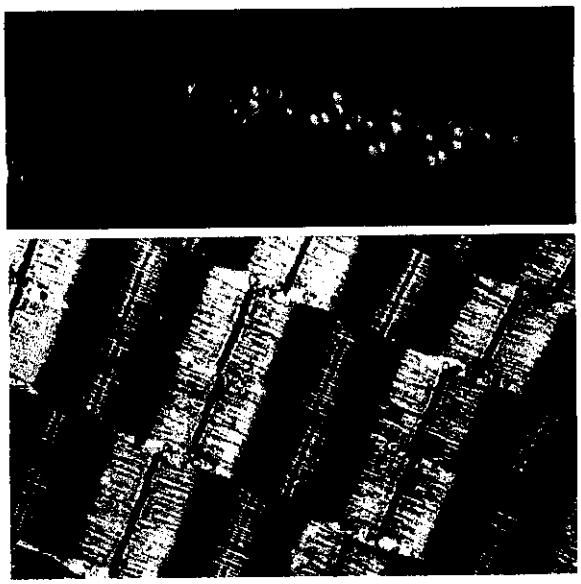
*Individual Studies—Students can complete up to two of the following short course programs for 2 credit hours each. Descriptions of these short courses are available at http://www.ag.ohio-state.edu/~meatsci

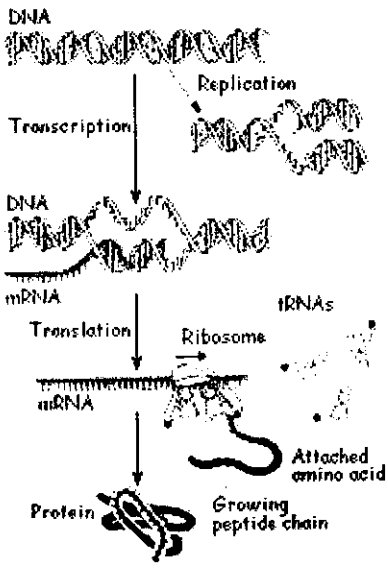
- Introductory HAACP Training for Meat and Poultry Processors
- Advanced HAACP Training for Meat and Poultry Processors
- Sausage/Processed Meats Short Course
- Thermal Processing of RTE Meat Products Short Course
- Lamb/Beef/Pork 509 Short Course

Restrictions and General Information

1. **This minor is not available to students majoring in Animal Sciences.**
2. **A *minimum overall* CPHR *for courses comprising the minor shall be 2.0.***
3. **A minor should be declared at the time a student accumulates 90 hours.**
4. **A student may not double count courses between the minor and other requirements.**
5. **Courses taken on a pass/non pass basis may not be applied to the minor.**

Animal Sciences 355.01
Principles of Meat Science
Winter 2005
MWF 12:00 - 12:48 PM
Room 117 Animal Science Building





Instructor: Dr. Henry Zerby
Office: 122A Animal Sciences Building
Phone: 688-4584
E-mail: zerby.8@osu.edu
Office Hours: open door policy

Objective: This course is organized to teach undergraduate students about the science, technology and business of processing and marketing muscle foods. In addition, students should develop an understanding of the terminology used in and associated with the meats industry and gain an appreciation for the many disciplines incorporated in meat science (genetics, nutrition, reproduction, biology, chemistry, health, microbiology, marketing, management, etc.).

- *Science*: Meat science includes the structure, composition and biology of muscle and associated tissues (adipose, connective, nervous and epithelial). The nutritional value and microbiology of meat will be studied.

- *Technology*: The process of converting animals into fresh meat and meat products will be covered. Anatomy will be studied in relation to meat cuts, meat quality and product yield.

- *Business*: The many facets of the meats industry will be studied. Meat packing and processing plant design will be studied in relation to product safety and yields. Factors affecting profitability of various sectors of the meat industry will be discussed.

Reading Material: Most of the reading materials can be found in the course packet, additional materials will be provided to the students throughout the quarter. Supplemental texts for this class include *Principles of Meat Science, The Meat We Eat* and/or *Muscle Foods*.

Attendance:
Students are expected to attend all class sessions. If a session is missed it is the student's responsibility to get material missed in class. Prior notification of absence on the day of an exam is requisite. Make-up exams will be given to students with acceptable excuses 1 to 3 days after the student returns to class, depending upon the circumstances of the absence. The format of the make-up exam will be determined by the instructor (i.e. essay exam, oral exam, combination of multiple types of questions, etc.). Quizzes may be given periodically during the quarter. There will not be an opportunity to take make-up quizzes. As always class participation, effort and attendance will be taken into consideration (positively or negatively).

Academic Integrity:
Students are subject to the provisions of the *Code of Student Conduct* (http://www.asc.ohio-state.edu/honors/conduct_document.htm), a compilation of rules and conduct and major policies and procedures affecting students. The code is published in the *Student Handbook* by the Office of Student Life. Academic misconduct (plagiarism, cheating, and other forms of misconduct as defined by the university) will not be tolerated in this course. According to Faculty Rule 3335-31-02 Academic Misconduct is defined as any activity which tends to compromise the academic integrity of the institution or subvert the educational process. Please see the Student Resource Guide or the instructor if you have questions about this policy.

Professionalism:
Students should be in the classroom and prepared to start at the time class is scheduled to begin. Interruptions for late arrivals will be noted and taken into account against attendance and class participation. During class time, students should only be conducting activities pertinent to the class (i.e. should not be doing work from other classes, reading the newspaper, etc.). Students should not wear hats during class (hairnets will be provided for any class activities in the Meat Laboratory). Cell phones should be turned off during class (cell phone interruptions will negatively impact your final grade)!!! Assignments should be completed in a legible and grammatically correct manner and turned in on time.

Any student who feels s/he may need an accommodation based on the impact of a disability should contact me privately to discuss your specific needs. Please contact the Office for Disability Services at 614-292-3307 in room 150 Pomerene Hall to coordinate reasonable accommodations for students with documented disabilities.

Grades:
Grades for this class will be on a traditional basis A, -A, +B, B … The final grade will be a weighted percentage of four categories: homework and quizzes, Midterm I, Midterm II and the final Exam. There will be a few homework assignments, and a number of quizzes during the quarter. The number of quizzes will be determined by the procedure described below. Together the homework assignments and quizzes will account for 25% of the final grade.

There will be two mid-term exams (100 points each; each 25% of the final grade) and a final (200 points; 25% of the final grade). All exams will be comprehensive. There will be optional bonus questions at the conclusion of each exam; correct answers will be awarded with additional points, however, incorrect answers will deduct points from the previous total. **Grammar, spelling and sentence structure will also be taken into account while grading quizzes and exams.**

Homework and quizzes	20%
Midterm I	25%
Midterm II	25%
Final Exam	30%

Grade	Percentage
A	100 - 90.0
A-	88.0 - 89.9
B+	86.0 - 87.9
B	83.0 - 85.9
B-	78.0 - 82.9
C+	76.0 - 77.9
C	73.0 - 75.9
C-	68.0 - 72.9
D+	66.0 - 67.9
D	60.0 - 65.9
E	0.0 - 59.9

Extra Credit
There will be two opportunities to **earn** some extra credit during the quarter.

If students participate in the Animal Sciences Quadrathlon they will be allowed to drop their lowest quiz score (so long as they were present to take the quiz).

-or-

If students participate in the S&S Ham and Corned Beef Cure Contest students will also be allowed to drop their lowest quiz score (so long as they were present to take the quiz). Completing these two activities still only allows you to drop one quiz, your two lowest quizzes.

The other opportunity will be announced at the appropriate time. Be assured that it will be exciting and fun!!

Tentative Schedule
This is a tentative schedule the dates are subject to change depending on the rate of progression and comprehension of the material.

Week 1 - Introduction
Introduction
History, Who's Who,

Week 2 – Meat Products and Food Safety
Nutrition
Composition
HACCP, Meat inspection

Week 3 – Food Safety (cont.)
Microbiology
Pathogens
Harvest, By-products

Week 4 - Live Animal to Retail Products
Fabrication, Primals and subprimals
Anatomy - muscles, bones & retail cuts
Grading
Exam 1 (tentatively 1/31)

Week 5 – Muscle Structure
Cells & membranes
Proteins
Collagen

Week 6, 7 – Muscle Function
Contraction
Postmortem metabolism
Exam II (tentatively 3/25)

Week 8 – Muscle Properties
Color
Tenderness
pH & WHC

Week 9 - Meat processing
Non-meat ingredients
Nitrites
Water binding

Week 10 - Sales
Packaging
Regulations
Labels
Review

Final Exam –
Monday, March 14, 11:30 - 1:18

ANIMAL SCIENCE 355.02
MEAT SCIENCE PRODUCTS LAB
WINTER 2005
COURSE INFORMATION SHEET

Lab Time: Tue , Thur 12:00-3:00 p.m.

Instructors: Dr. Henry Zerby Gary Dunlap Jaime Bard
122A Animal Science Bldg.
688-4584
zerby.8@osu.edu

Text: (optional) Meat Science Laboratory Manual (7th Edition) Savell and Smith
The Meat We Eat, 13th Edition (1994, Interstate Publishers)
Romans, Costello, Carlson, Greaser, and Jones

Course Objectives:
To gain an understanding of the procedures associated with wholesome and humane harvest of meat animal species. Develop a working knowledge of muscle and nomenclature and anatomy. Acquire an appreciation for quality and value determining factors of meat retail cuts and muscle food products.

Academic Integrity:
Students are subject to the provisions of the *Code of Student Conduct*, a compilation of rules and conduct and major policies and procedures affecting students. The code is published in the *Student Handbook* by the Office of Student Life. Academic misconduct (plagiarism, cheating, and other forms of misconduct as defined by the university) will not be tolerated in this course. According to Faculty Rule 3335-31-02 Academic Misconduct is defined as any activity which tends to compromise the academic integrity of the institution or subvert the educational process. Please see the Student Resource Guide or the instructor if you have questions about this policy.

Professionalism:
Students should be in the classroom and prepared to start at the time class is scheduled to begin. Interruptions for late arrivals will be noted and taken into account against attendance and class participation. During class time, students should only be conducting activities pertinent to the class (i.e. should not be doing work from other classes, reading the newspaper, etc.). Students should not wear hats during lecture (hairnets and bump caps will be provided for any class activities in the Meat Laboratory). Students should wear proper attire to work on the harvest floor or in the cooler for respective classes and she present themselves with proper hygiene. Cell phones should be turned off during class (cell phone interruptions will negatively impact your final grade)!!!

Any student who feels s/he may need an accommodation based on the impact of a disability should contact me privately to discuss your specific needs. Please contact the Office for Disability Services at 614-292-3307 in room 150 Pomerene Hall to coordinate reasonable accommodations for students with documented disabilities.

Attendance:
Students are expected to attend all class sessions. If a session is missed it is the student's responsibility to get material missed in class. Make-up exams will be given to students with acceptable excuses 1to 3 days after the student returns to class, depending upon the circumstances of the absence. Prior notification of absence on the day of an exam is requisite.

Grades:
Grades for this class will be on a traditional basis A, -A, +B, B … All exams will be comprehensive. The score will be based on the percentage of points earned versus what was offered throughout the quarter.

	pts.
3 Exams (100 pts. each)	300
Harvest Practicum	100
Fabrication Practicum	100
Quizzes (# to be determined)	
Attendance (see below)	100

Attendance Score =
[Number of classes attended/(20 - excused absences)] x 100

Grade	[illegible]
A	100---90.0
A-	88.0 - 89.9
B+	86.0 - 87.9
B	83.0 - 85.9
B-	78.0 - 82.9
C+	76.0 - 77.9
C	73.0 - 75.9
C-	68.0 - 72.9
D+	66.0 - 67.9
D	60.0 - 65.9
E	0.0 ---59.9

ANIMAL SCIENCE 355.02
MEAT LABORATORY – WINTER 2005
COURSE OUTLINE

Date			TOPIC	READING
JAN	4	T	Course Introduction, Locker/Equipment Check, Tour, Knife Sharpening, Safety	
	6	R	Skeletal Structure, Muscle Anatomy	
	11	T	Quality Control, Meat Inspection and Grading, Food Safety	
	13	R	Hog Evaluation, Hog Harvest	
	18	T	Pork Fabrication, Retail Cuts and Cutting Test	
	20	R	Curing Hams and Bellies	
	25	T	**Midterm I** – Slicing and packaging bacon	
	27	R	Lamb Harvest & Beef Demo	
	1	T	Live Hog Evaluation, Ultrasound, Pricing, Pork Quality	
FEB	3	R	Lamb and Pork Harvest (Evaluation) & cuts for Buckeye	
FEB	5	Sat.	Buckeye Invitational Meats Contest 7:00 to 11:00 am	
	8	T	Lamb Fabrication, Retail Cuts and Cutting Test	
	10	R	Lamb Harvest (Evaluation) and Beef Harvest	
	15	T	Beef Quality/Yield Grading, Pricing	
	17	R	Beef Harvest (Evaluation)	
	22	T	Midterm II	
	24	R	Beef Forequarter Fabrication	
MAR	1	T	Beef Hindquarter Fabrication	
	3	R	Finish Beef Fab, review cuts, grind and package	
	8	T	Retail ID quiz, Exam III	
	10	R	Meat Industry Tour	

INTRODUCTORY ANIMAL SCIENCES
ANIMAL SCIENCE 200

Web address: http://www.ansci.osu.edu/as200/

Online study questions: http://cw.prenhall.com/bookbind/pubbooks/damron/

Instructor: Dr. Karol E. Fike
110 E Animal Sciences
292-3787

Office hours: open or upon arrangement
email: Fike.21@osu.edu

Lecture: Room 100 Agriculture Engineering
MWRF 12:00 to 12:48 pm

Laboratory: 111S Animal Sciences
Section 1: 8:00 to 9:48 am
Section 2: 10:00 to 11:48 am
Section 3: 1:00 to 2:48 pm

Teaching Assistants:

Section 1 (8 am)	Chad Gasser	Plumb Hall 327 Gasser.23@osu.edu	292-4523
Section 2 (10 am)	Nate Fastinger	Plumb Hall 202 Fastinger.1@osu.edu	292-7192
Section 3 (1 pm)	Megan Varns Danyelle Dauch	Varns.3@osu.edu Dauch.5@osu.edu	286-6238 291-7828

Required Textbook: Introduction to Animal Sciences, W. Stephen Damron, Prentice-Hall, 2000 edition.
The textbook is required in this course as it will be used for lecture exercises and is an EXCELLENT resource for course activities, studying for exams, and as a future reference for those pursuing careers in agriculture and science.

Course Objectives:

1. To understand the contributions of animals to human needs.
2. To understand current social issues surrounding the production of animals for food and recreation.
3. To introduce scientific principles of farm animal genetics, reproduction, nutrition, health, and behavior.
4. To characterize and describe the purposes of basic management practices of food animals and horses.

Evaluation of Learning

Learning opportunities

1. Laboratory

articles	see additional sheet
exercises	provided in lab

2. Lecture quizzes and exercises

Unannounced team and (or) individual quizzes and exercises will be completed in class.

3. Exams

The format of all exams will be a combination of short-answer, matching, fill in the blank, multiple choice, and true-false.

Exam 1 – covers material from lecture and lab since start of class
Exam 2 – covers material from lecture and lab since exam 1
Final exam – comprehensive (covering material from entire class) but weighted toward material covered between time of exam 2 and final exam

Laboratory exercises and articles	22 %
Lecture quizzes and exercises	18 %
Exam 1	18 %
Exam 2	18 %
Final Exam	24 %
Total	**100 %**

A = 93 to 100 %	B- = 80 to 82 %	D+ = 67 to 69 %
A- = 90 to 92 %	C+ = 77 to 79 %	D = 60 to 66 %
B+ = 87 to 89 %	C = 73 to 76 %	E = < 60 %
B = 83 to 86 %	C- = 70 to 72 %	

Graduating seniors will have the option of taking the final exam or receiving the grade earned up to the final exam in the class.

Team activities:

You will be asked to work in teams during both labs and lectures for many exercises and quizzes throughout the quarter. It is expected that all team members contribute to discussion and work to enhance learning and understanding by all team members. If you feel a team member is consistently "not pulling their weight" please discuss it with your teaching assistant or me.

4. Bonus opportunities:

You have the opportunity to earn a maximum of 2 percentage points (2 % to be added to your final course percentage) by completing **ONE** of the following. You may participate in more than one but will receive bonus points for only one:

a. *Waterman Dairy Unit Tour Leader* (2 %) – further information to be provided
Write a ONE page (double-spaced; 12 pt font on word processing program) summary describing your experience **(due Monday, Nov. 19th at beginning of class).**

b. *Buckeye Royal Dairy Show* (2 %) – HELD ON OCT. 27; further information on show to be provided
Write a ONE page (double-spaced; 12 pt font on word processing program) summary describing your experience **(due Monday, Nov. 19th at beginning of class).**

c. *Animal Science Issues Articles* (2 articles for 1 % each) – choose a popular press article from the past 6 months that you have read relating to the animal science industries and address the following questions (**2 pages per article**; double-spaced; 12 pt font on word processing program). Include an appropriate citation of the article. **(due Monday, Nov. 19th at beginning of class).**

- How does the article specifically relate to what you have learned in Introductory Animal Sciences and how does it impact animal agriculture?
- How has the knowledge gained from the article affected you personally in your thoughts, beliefs, future plans, etc.?

Attendance:

Attendance is required for both laboratory and lecture if you hope to learn about the animal science industry. If you need to miss a lecture session, you must:

- **contact me BEFORE** the class period
- make arrangements to complete any missed activities, otherwise you will receive a zero for any graded activities that day

If you need to miss a laboratory session, you must:

- **contact your teaching assistant** for your lab section **BEFORE** class
- make arrangements to complete any missed laboratory exercises, otherwise you will receive a zero for any graded activities that day

Appropriate Dress:

Many laboratory activities will involve handling animals, equipment, feeds, etc. It is expected that you will dress appropriately for laboratory sessions so that you may fully participate in labs.

Student Disabilities:
Any student who feels she/he may need an accommodation based on the impact of a disability should contact me privately to discuss your specific needs. Please contact the Office for Disability Services at 614-292-3307 in room150 Pomerene Hall to coordinate reasonable accommodations for students with any documented disabilities.

Academic Misconduct:

Any student suspected of any form of academic dishonesty (ie. plagiarism, cheating) will by handled according to the Student Conduct of Codes.

Guidelines for Animal Sciences 200 Laboratory Articles

During 4 labs of the quarter you will be given a choice of several topics pertinent to animal agriculture from which you will write an article due at the following week's lab. You are encouraged to use a variety of resources (books, internet, magazines, interview, etc.) to develop a more comprehensive understanding of the topic you choose and convey that understanding via a type-written article.

The Ohio State University Center for the Study and Teaching of Writing provides excellent guidelines for development of your writing skills. These are the guidelines that will be used to evaluate the quality of your laboratory articles. Their web site is:

www.cohums.ohio-state.edu/cstw/handouts.htm

The following links on their web site should be quite useful guidelines for your writing:

- **Elements of the Paper**
  - **Paragraph**
  - **Conclusions**
  - **Introductions**
  - **Quick Ideas for Introductions and Conclusions**

- **Genre Skills**
  - **Informative Essay**

- **Grammar & Punctuation**

- **Research**
  - **MLA Documentation Style: References**
  - **MLA Documentation Style: In-Text Citations**
  - **Citing Electronic Resource**
  - **Summarizing and Paraphrasing**
  - **Plagiarism: What it is and How to Avoid it**

Following are the requirements and guidelines by which the laboratory articles will be evaluated.

- **REQUIREMENTS**

  - 2 to 2 ½ pages (this does not include title pages or citations)
  - double-spaced
  - 12 point font
  - 1 inch margins
  - appropriate citation of references used

- **GRADING**

  - Organization and Neatness (25 %)
    Are minimum requirements for organization and layout met?
    Is the paper clean, neat, and presentable?
    Is the article organized into an introduction, body and conclusion?
    Is the thesis clearly stated, limited, and precise?
    Are references in the article appropriately cited?

  - Spelling, Grammar, and Punctuation (25 %)
    Does the article contain errors in:
    spelling?
    grammar?
    - no sentence fragments or run-on sentences
    - pronoun and verb agreement

    punctuation?
    capitalization?

  - Content (50 %)
    Was the topic explored thoroughly?
    Were ideas thoroughly developed?
    Was the information presented relevant, current, and factual?
    Did the author use appropriate citations to support statements?
    Did the author express clarity of understanding of topics covered?

Animal Science 250
Food Animal Products
MWF 1:00 to 1:48 pm; Ag Engineering 100
Autumn, 2004

Instructors:

Dr. Paul Kuber
122D Animal Sciences
Ph. 247-8305
kuber.2@osu.edu

Dr. Henry Zerby
122A Animal Sciences
Ph. 688-4584
zerby.8@osu.edu

Prerequisites: AS200 or concurrent registration or equivalent

Website: http://ansci.osu.edu/as250
Powerpoint presentations, when used in class, will be posted to this site after discussed in class.

Course Objectives:

1. To impart knowledge relating the live animal to its ultimate value as a food product.
2. To introduce the principles of structure and function, chemical composition and physical characteristics of animal products.
3. To relate basic principles of chemistry and biology to the production, processing, and functions of animal-derived food products.
4. To describe examples of how animal-derived food products and their components function as nutraceuticals.
5. To discuss historical aspects of the development of food animal products.
6. To discuss the extent to which, and the variety of ways food animal products impact our society (environmental compatibility, social responsibility and economical viability).
7. To provide examples of and discuss ways in which animals are used to provide industrial and pharmaceutical products for society.

Texts

There is no required textbook in this course. Class notes and references to recommended readings will be provided.

References (these are on reserve in the Agriculture Library in the Agriculture Administration Building):

Introduction to Animal Sciences, W. Stephen Damron, Prentice-Hall, 2nd ed.

Principles of Meat Science, 4th Ed. E.D. Aberle, J.C. Forrest, D.E. Gerrard, and E.W. Mills

Scientific Farm Animal Production: An Introduction to Animal Science, 8th ed., RE Taylor and TG Field

Student Disabilities

If you need an accommodation based on the impact of a disability, you should contact me to arrange an appointment as soon as possible. At the appointment we can discuss the course format, anticipate your needs and explore potential accommodations. I rely on the Office For Disability Services for assistance in verifying the need for accommodations and developing accommodation strategies. If you have not previously contacted the Office for Disability Services, I encourage you to do so. Questions about the rights and responsibilities of those with disabilities and the rights and responsibilities of the University may be directed to: L. Scott Lissner, ADA Coordinator, Office of Academic Affairs - 614-292-6207/ada-osu@osu.edu.

Academic Misconduct

Any student suspected of any form of academic dishonesty (ie. plagiarism, cheating) will by handled according to the Code of Student Conduct. The Code of Student Conduct may be found at: http://studentaffairs.osu.edu/info_for_students/csc.asp

Grading

Evaluation of your comprehension of course material will be based upon exams, quizzes and exercises (in class or take-home).

Quizzes and exercises

- Two writing assignments will be given during the quarter. Due dates for the scheduled writing assignments are included in the class schedule. Each will be weighted equally. Refer to the "writing guidelines" section of this syllabus for more information. General topic areas of these three include 1. Nutrient composition of animal products and 2. transgenic animals/plants
- Quizzes will be given at our discretion at any time throughout the quarter. They may include any concepts discussed in class up to that point.
- The format of the quizzes and exams will be a combination of any or all of the following: multiple choice, fill-in the blank, matching and short essay.
- You will be able to drop your low quiz/exercise score if you attend the Animal Sciences Internship Forum within the guidelines outlined below.

Exams

Exams 1 & 2 may include any material discussed in class up to that point, but generally will focus on material discussed since the last exam. The final exam will be comprehensive.

Exam 1	20 %
Exam 2	20 %
Quizzes/exercises	30 %
Quizzes/misc. exercises – 15 %	
Writing assignments – 15 %	
Final exam	30 %
Total course %	100 %

Extra credit

Attend Animal Sciences Internship Forum

- Students who have completed internship experiences during the summer will present an overview of their internship in ½ hour time slots. This is a great opportunity to learn about internship possibilities for yourself and (or) career paths you may not have considered.
- We will announce the dates and location of the Internship Forum in class. Specific schedules of presentations will be provided as the Forum approaches.
- ***You must attend 3 student internship presentations for credit (all or none).*** You must sign attendance sheet yourself, so look for the sheet when you attend.

Final grade

Final grades will be determined by the following:

Grade	Percentage
A	100---90.0
A-	88.0 - 89.9
B+	86.0 - 87.9
B	82.0 - 85.9
B-	78.0 - 81.9
C+	76.0 - 77.9
C	72.0 - 75.9
C-	68.0 - 71.9
D+	66.0 - 67.9
D	60.0 - 65.9
E	0.0 ---59.9

Attendance

There will not by any makeup quizzes given. Absences will only be excused for university-sponsored activities, personal illness (you must provide a doctor's note), or family emergency (life-threatening illness, death). In the case of an excused absence, any missed quizzes will not be calculated into your final course percentage. If you miss class due to one of the aforementioned reasons you should:

- Either contact Dr. Zerby or Dr. Kuber **BEFORE** the class period (for planned absences) or within 1 day following the absence (due to illness or emergency). Failure to do so will result in an unexcused absence and thus a zero for any graded activities that day.

- When exams are taken, we will hand out the exams at the start of the class period (when the bell rings). When the first student from the class completes and turns in the exam, no new exams will be handed out thereafter and no makeup exams will be provided thereafter for any student without an excused absence.

- Late papers (those handed in after the end of the class period on the due date) will automatically receive a zero.

Writing Assignment Guidelines

- The Ohio State University Center for the Study and Teaching of Writing provides excellent guidelines for development of your writing skills. These are the guidelines that will be used to evaluate the quality of your laboratory articles. **YOU ARE VERY STRONGLY ENCOURAGED TO UTILIZE THIS RESOURCE**. You are especially advised to read the information on the link pertaining to plagiarism. You should provide citations to resources used within the text of the paper and if a source is directly quoted, the material quoted should be contained within quotation marks. Their web site is:

  http://www.cohums.ohio-state.edu/cstw/writing_center/handouts/index.htm

- Below is the website for the OSU library through which you can search for books, research journals, and a variety of other resource materials for completing your papers.

  http://library.ohio-state.edu/search

- The following guidelines must be adhered to for the class writing assignments.

  - **minimum 2 full pages; maximum 5 full pages (not including reference page)**
  - **1 inch margins**
  - **12 pt Times New Roman font**
  - **double line spacing**
  - **use a minimum of 3 different resources for references; at least one of which must be a resource other than the world wide web**
  - **use of Journal of Animal Science guidelines and format for references**

- The following guidelines will be used in evaluation of your articles.

Organization and neatness	20 %
Logical flow of ideas	
Introduction, body, conclusion	
Professionalism of presented materials	
Appropriate documentation and use of citations	
Grammar, spelling, and punctuation	30 %
Appropriate grammar	
Absence of spelling and punctuation errors	
Adherence to guidelines on page length, font & margins	
Content	50 %
Appropriately addressing the assignment	
Substance and depth of ideas	
Thoughtfulness, originality	

DATE	DAY	TOPIC
22-Sep	Wed	Introductions & discuss syllabus
24-Sep	Fri	History of food animals
27-Sep	Mon	Animal product composition and nutrient value
29-Sep	Wed	Animal product composition and nutrient value
1-Oct	Fri	Animal product composition and nutrient value
4-Oct	Mon	Animal food products - MEAT: composition, quality and function
6-Oct	Wed	Animal food products - MEAT: composition, quality and function
8-Oct	Fri	Animal food products - MEAT: composition, quality and function
11-Oct	Mon	Meat animal rendering and byproducts
13-Oct	Wed	Meat animal rendering and byproducts - **1st writing assignment due**
15-Oct	Fri	Group activities
18-Oct	Mon	Review
20-Oct	**Wed**	**EXAM 1**
22-Oct	Fri	EXAM 1 REVIEW
25-Oct	Mon	Animal food products - FIBER: wool, mohair, hair and feathers
27-Oct	Wed	Animal food products - FIBER: wool, mohair, hair and feathers
29-Oct	Fri	Animal food products - EGGS: composition, quality, and function
1-Nov	Mon	Animal food products - EGGS: composition, quality, and function
3-Nov	Wed	Egg products
5-Nov	Fri	Group activities and review
8-Nov	Mon	Animal products - MILK: composition, quality, and function
10-Nov	Wed	Animal products - MILK: composition, quality, and function
12-Nov	Fri	Milk and dairy products
15-Nov	Mon	Milk and dairy products
17-Nov	Wed	Group activities and review
19-Nov	**Fri**	**EXAM 2**
22-Nov	Mon	EXAM REVIEW
24-Nov	Wed	Animal products - pharmaceutical/nutraceutical applications; transgenics & cloning
26-Nov	Fri	**NO CLASS – Thanksgiving Break**
29-Nov	Mon	Animal products - pharmaceutical/nutraceutical applications; transgenics & cloning
1-Dec	Wed	**2nd writing assignment due at beginning of class**
3-Dec	Fri	Review
7-Dec	**Tue**	**FINAL EXAM: Comprehensive 11:30 am - 1:18 pm in Ag Engineering 100**

Animal Sciences 305 SYLLABUS
Meat Animal and Carcass Evaluation

Instructor: Henry Zerby
122 A Animal Science Bldg.
688-4584

Time and Location: M-W-F 3:00 to 5:00 p.m.,
Animal Science Bldg., Room 117/Meat Lab

Objectives:

Primary Objective - This course is organized to teach undergraduate students about the factors that influence the value of meat animals, carcasses and wholesale cuts in accordance with recognized grading standards. In addition, students should develop an understanding of skeletal structure, anatomy and nomenclature of muscles and the terminology associated with the meats industry. Students also will learn to apply Good Manufacturing Practices and Standard Operating Procedures in a processing setting.

Secondary Objective - Students who successfully complete this class and are interested in applying the skills they have acquired can compete on a national level as members of The Ohio State University's Meat Judging Team. Students will have the opportunity to visit beef, lamb and pork processing facilities and to travel to several contests. As a traveling member of the Meat Judging Team students will gain several industry and academic contacts that may aid in developing plans for graduate studies and/or future employment.

As a result of actively participating in this class, students will develop/enhance the following valuable life skills:

- **think** critically
  - To "Think": to formulate in the mind, to reason about, to reflect on, to decide
  - "Critically": characterized by careful and exact evaluation and judgment
- **compare** logically
  - To "Compare": to examine in order to note the similarities in, or differences between/among things
  - "Logically": showing clarity and consistency of use of the principles of reasoning
- **solve** problems rationally
  - To "Solve": to find a solution for, an answer to, or an explanation for, a problem
  - "Rationally": exercising the ability to reason in a sound, sane and logical manner
- **decide** independently
  - To "Decide": to make up one's mind, to make or reach a decision, and/or to pronounce a judgment or verdict
  - "Independently": free from the influence of another or others, autonomously, and/or by self-reliance
- **communicate** effectively
  - To "Communicate": to have an interchange of thoughts and ideas, and to make known your thoughts and ideas
  - "Effectively": having intended or expected effect and/or serving the purpose
- **lead** decisively
  - To "Lead": to be first, to be ahead, to steer, to guide and/or to show the way, by going in advance
  - "Decisively": having the power to settle a dispute or doubt in a firm, conclusive, resolute and determined manner

Reading Material:

- Text – Meat Evaluation Handbook published by American Meat Science Association
- Additional reading materials will be supplied by the instructor.

Grades:

Grades for this class will be on a traditional basis A, -A, +B, B …
There will be three species test worth 100 points each.
There will be several judging classes throughout the quarter worth 50 points each.
There will be several sets of written reasons that correspond with the judging classes worth 50 points each.
There will be several classes of specifications that will be worth 100 points each.

Final grade will be computed as a percentage of the total possible points during the quarter.

Extra Credit Opportunities

- Quadrathlon
- Little International and/or S&S Ham & Corned Beef Curing Contest
- Buckeye Invitational (February 15)

Professionalism:

Students should be in the classroom and prepared to start at the time class is scheduled to begin. Interruptions for late arrivals will be noted and taken into account against attendance and class participation. During class time, students should only be conducting activities pertinent to the class (i.e. should not be doing work from other classes, reading the newspaper, etc.). Students should not wear hats during class (hairnets will be provided for any class activities in the Meat Laboratory). Cell phones should be turned off during class (cell phone interruptions will negatively impact your final grade)!!! Assignments should be complete in a legible and grammatically correct manner and turned in on time.

Attendance:

Students are expected to attend all class sessions. If a session is missed it is the student's responsibility to get material missed in class. Make-up exams will be given to students with acceptable excuses 1-3 days after the student returns to class, depending upon the circumstances of the absence. Prior notification of absence on the day of an exam is requisite. Pop quizzes may be given periodically during the quarter. As always class participation, effort and attendance will be taken into consideration (positively or negatively).

Academic Integrity:

Students are subject to the provisions of the *Code of Student Conduct*, a compilation of rules and conduct and major policies and procedures affecting students. The code is published in the *Student Handbook* by the Office of Student Life. (http://www.ohio-state.edu/honors/conduct_document.htm)

AS 305 Class Schedule

January 6	Review Syllabus/Introduction Notes/Reasons
January 8	Notes/Reasons
January 10	Pork Overview
January 13	Pork Carcasses & Reasons
January 15	Hams, Loins and Chops
January 17	Pork Carcasses & Reasons (grade)
January 20	NO CLASS
January 22	Hams, Loins and Chops (grade)
January 24	Pork Specifications
January 27	Pork Specifications
January 29	Pork Specifications (grade)
January 31	Pork Test
February 3	Lamb Carcasses & Reasons
February 5	Lamb Specifications
February 7	Lamb Carcasses & Reasons (grade)
February 10	Lamb Specifications (grade)
February 12	Lamb Test – Beef Overview
February 14	Beef Grading
February 17	Beef Carcasses & Reasons
February 19	Beef Ribs and Shortloins & Reasons
February 21	Beef Carcasses & Reasons (grade)
February 24	Beef Ribs and Shortloins & Reasons (grade), Rounds
February 26	Beef Rounds (grade) and Beef Specifications
February 28	Beef Specifications
March 3	Beef Specifications
March 5	Beef Specifications (grade)
March 7	Beef Test
March 10	Review/Practice
March 12	Review/Practice
March 14	Review/Practice
	Spring Break workout
April 5	**South Eastern Contest**

Animal Sciences 400
ANIMAL GROWTH AND DEVELOPMENT

Course Objective: To understand the basis for animal growth processes and to integrate genetics, nutrition and physiology in how they jointly influence animal growth.

Instructor: Dr. D.C. Mahan
Office: Room 205 Plumb Hall
Phone: 292-6987

Course Hours: MTWR at 10:00 AM

Location: Room 202 Animal Science Building

Prerequisites: Animal Science 310; 320; 330, (420; 430)

Text: None

Course Requirements:

A. Exams

Three 1-hour examinations (100 points each) will be given during the course. Each exam will be cumulative, but will emphasize the material since the last exam. There will be No Final exam.

B. Quizzes

There will be several announced quizzes (10 pts each) during the quarter. Make-up quizzes will not be given but will be considered as excused if the absence has been previously approved by the instructor. The lowest quiz score will be dropped. Quiz questions will generally cover the material since the last exam.

C. Class Discussion

Students are expected to participate in class discussions which will be subjectively (0 to 5%) evaluated by the instructor.

D. Grading

Grades will be based on the average percentage of total points generated during the course. The approximate total number of points available are indicated below. Grades will be based on the final average plus another 0 to 3% evaluation by the instructor. (A = 93-100; B = 86-92; C = 78-85; D = 65-77; E = <65%).

SYLLABUS	
Section	Description (Subtopic Outline)
I	Introduction What is growth, hypertrophy, hyperplasia? General growth curve
II	Prenatal Growth and Development Prenatal growth phases Fetal nutrition Factors affecting fetal growth
III	Postnatal Growth Normal body development patterns Periods of postnatal growth a. Neonatal period b. Weaning c. Grower-finisher d. Reproduction Effect of nutrient restriction on growth processes
	Exam
IV	Skeletal Development Bone cellular components Bone growth patterns Factors affecting bone development a. Nutrition b. Genetics
V	Muscle Development Protein synthesis Muscle development Factors affecting muscle growth a. Genetics b. Nutrition c. Growth regulators
	Exam
VI	Fat Development Adipocyte development Factors affecting fat development a. Genetic b. Sex c. Nutrition Obesity and starvation Practical animal feeding practices
VII	Body Composition What is chemical maturity? Determining body composition a. Live animal b. Carcass
	Exam

ANIMAL SCIENCES 413

PRINCIPLES OF ANIMAL HEALTH
Spring 2005
T & R
Coordinator: Joe Hogan (hogan.4@osu.edu)
5-3801

COURSE DESCRIPTION: Introduction to infectious diseases affecting livestock.

PURPOSE: Provide students with an introduction to infectious diseases and detail the animal husbandry practices influencing the host-pathogen interactions.

OBJECTIVES: Specific objectives for each student to accomplish include:

1. Identify the etiological agents responsible for major infectious diseases.
2. Understand the basic elements of immunological responses and host defenses systems against infections.
3. Identify environmental factors that influence exposure of pathogens to the host.
4. Determine the intrinsic factors that influence the host's resistence to disease.
5. Outline management programs to prevent and control infectious diseases of economic importance to animal agriculture.

CREDITS: 5 hours

TEXT: No text will be required.

READING LIST: Provided by the instructors and updated each quarter the class is offered to keep material current.

Website: http://www.oardc.ohio-state.edu/as413/default.asp

animalhealthout.wpd

TENTATIVE SCHEDULE OF EXAMS

EXAM I	lecture period 7
EXAM II	lecture period 14
EXAM III	final exam period

ATTENDANCE POLICY

No make-up quizzes will be given. Quizzes missed due to university excused absence will not be tallied in the final grade. Make-up exams will be at the discretion of the instructor.

EVALUATION

Exams, quizzes, and homeworks will include multiple choice, matching, definitions, and essay questions. Eight quizzes and two homework assignments will be scheduled during the course. Final grades will be determined as outlined below:

GRADING

1) Quizzes and Homework	25%
2) Midterm I	25%
3) Midterm II	25%
4) Final	25%

A = 93-100%
A- = 90-92%
B+ = 87-89%
B = 83-86%
B- = 80-82%
C+ = 77-79%
C = 73-76%
C- = 70-72%
D+ = 67-69%
D = 60-66%
E = < 60%

LECTURERS

Dr. Julie Funk funk.74@osu.edu
Dr. Richard Slemons slemons.1@osu.edu
Dr. Cliff Monahan monahan.19@osu.edu
Dr. Gary Bowman bowman.7@osu.edu
Dr. William Shulaw shulaw.1@osu.edu
Dr. Lowell Midla midla.1@osu.edu

ACADEMIC MISCONDUCT

Any student suspected of academic misconduct will be handled according to the Student Codes of Conduct at http://oaa.osu.edu/coam/code.html

DISABILITY STATEMENT

Any student who feels s/he may need an accommodation based on the impact of a disability should contact me privately to discuss your specific needs. Please contact the Office for Disability Services at 614-292-3307 in room 150 Pomerene Hall to coordinate reasonable accommodations for students with documented disabilities.

ANIMAL SCIENCES 413
SPRING 2005

Hours Lecture	Topic
3	Introduction a. Economic importance of infectious diseases b. Definitions c. Host-pathogen interaction
5	Host resistence and immunity a. mechanical and chemical barriers b. inflammation c. phagocytic cells d. immune response
3	Etiological Agents - Viruses a. structure b. phases of viral Infection c. effects of viruses on eucaryotic cells
3	Etiological Agents - Bacteria a. structure and metabolism b. phases of bacterial infection c. effects of bacteria on eucaryotic cells
3	Etiological Agents - Parasitic a. enteric b. blood c. external
6	Natural and Acquired Resistence a. genetic selection b. nutrition c. immunization
6	Environment - Housing and Health a. animal density b. pathogen loads c. ventilation d. climate control
3	Environment - Sanitation a. disinfectants b. biosecurity

ANIMAL SCIENCES 413
SPRING 2005

Hours Lecture	Topic
2	Regulatory Issues a. AMDUCA b. USDA-APHIS (eradication programs) c. trade issues
14	Public Health and Economically Important Diseases a. cows b. swine c. sheep d. horses e. poultry

animalhealthout.wpd

Animal Sciences 555.01
Advanced Meat Science

Instructor	Dr. Macdonald Wick	Dr. Henry Zerby
Office	125 Vivian Hall	122A Animal Sciences Bldg
Phone	292-7516	688-4584
E-mail	wick.13@osu.edu	zerby.8@osu.edu
Office hrs	MWF 1-3PM or by appointment	MWF 1-3PM or by appointment

March 29, 2004 -June 4, 2004

MWF 10:00 - 10:48 AM

114 Food Science building

Course Objectives

The majority of the course is in a "Problems Based Learning" format. That is, "instructional strategies in which students confront contextualized, ill-structured problems in poultry meat and muscle functionality and strive to find meaningful solutions" (1). The overall goal is to have students be able to observe critically and formulate testable hypotheses to solve problems in the meat industry. By examining current problems in the meat industry, students will incorporate previously learned principles of meat science with current analytical technology to formulate testable hypotheses that seek to determine the underlying causes of the problems. Students will be able to describe how the structural and functional properties of muscle interact to determine the quality characteristics in meat. In addition, students will be able to apply analytical techniques to determine the functional properties of meat.

1. Rhem, J. 1998. Problem-Based Learning: An Introduction. The National Teaching & Learning Forum The Oryx Press Phoenix, Arizona 85012. Vol. 8, No. 1:1-4

Course Description

This course will be grouped into two sections. In the first and largest section we will explore how the increasing problem of PSE in turkeys is related to the structural and functional properties of muscle. We will also examine how current analytical techniques can be used to determine which structural components of muscle are participating in meat quality. The second section of the class will be a discussion on how BSE compares and contrasts with other microbiological hazards in meat and ways in which the hazard can be reduced in both live animals and in meat.

Readings

Required: *Peer reviewed, published articles and unpublished data will be handed out in class.*

Text: There is no required text for this course. However, the following will be on reserve in the Ag library to be used as a reference for basic meat science principles that have been covered in previous courses.

Recommended: *Science of Meat and Meat Products,* 3rd Ed. (1997, Food and Nutrition Press) Brice and Schweigert **(M&MP)**
Muscle Foods, 1st Ed. (1994, Chapman & Hall), Kinsman, Kotula, and Breidenstein.
Lawrie's Meat Science, 6th Ed, (1998, Technomic Publishing Co) Lawrie **(LMS)**

Course Content

Topic	Analytical techniques	Dates	Objectives	Readings
PSE Overview		March 29th and 31st	Differentiate between porcine PSE and turkey PSE	PSE-Like syndrome in breast muscle of domestic turkeys: a review. Sosnicki, et al., 1998
Genetics of Growth	Growth and physiological measurements	April 2nd and 5th	Describe the "progress" of turkey genetic selection since the 1960's and describe the R, F, and C lines developed at OARDC	Genetics of growth and reproduction in the turkey. 14 changes in genetic parameters over thirty generations of selection for increased body weight. Nestor et al., 2000
Structure of Muscle and PSE	SDS-PAGE and Western Immunoblot analysis	April 7th and 9th	Describe how SDS-PAGE can be used to determine changes in the proteins profile of turkeys	Influence of stress on composition and quality of meat, poultry and meat products. Berg, E. Unpublished data
Connective Tissue	Enzyme Linked ImmunoSorbant Assays	April 12th and 14th	Describe how genetic selection for growth has altered connective tissue content of muscle	Effect of selection for growth rate on muscle damage during breast muscle development. Velleman, et al. 2003
Exam 1		April 16th		
Metabolism of muscle: ante-mortem, post-mortem, and in relation to PSE	pH	April 19th and 21st	Discuss how ante-mortem metabolism differs from post-mortem metabolism and the affects of acid on PSE	Effect of rapid rigor mortis processes on protein functionality in pectoralis major muscle on domestic turkeys. Pietzrak, et al. 1997
Water and Salt Interaction within muscle and meat	Water-holding capacity analysis	April 23rd, April 26th, and April 28th	Describe how salt ions and water interact with myosin and explain the outcomes on meat	Functional analyses of muscles from turkeys selected for rapid growth. Updike, et al. unpublished data
Exam 2		April 30th		
Processed Meat Products	Rheological Analysis	May 3rd, May 5th and May 7th	Explain each step in the formation of a thermally set meat gel	Preliminary data from the grant entitled "Functional analyses of turkey breast muscle." Submitted by Wick et al. 2004
Analysis of Meat Quality	Test Panel Color probe	May 10th	Describe how various analyses can be used to accurately measure meat quality characteristics	
Exam 3		May 12th		

Introduction to BSE		May 14th and May 17th	Describe what BSE is and possible modes of transfer	Bovine spongiform encephalopathy (BSE) and its epidemiology. Smith, P.G., et al. 2003
HACCP	Colony counting	May 19th	Compare and contrast steps to prevent microbial contamination with steps to prevent BSE contamination	
Exam 4		May 21st		
Review and Conclusions		May 24th		
Final Exam		May 26th, May 28th and June 4th		

Take Home Assignments

Periodically throughout the quarter, the professors will develop take home assignments based on the direction of the in class discussion. These assignments will focus more on the process of obtaining information rather than the information itself. For example in past classes, an assignment has been to look for a research paper on a particular topic and describe the process used to find that paper.

Exams

All exams are cumulative as each topic builds on the principles previously discussed. The questions will be a mixture of fill in the blank, short answer, and essay. The questions will not only test to determine the students mastery of the facts presented, but also for the students ability to demonstrate the ability to apply those facts to the problems of PSE and BSE. The final question on each exam will be "Given and unlimited budget, develop a hypothesis to explain the problem of PSE in turkeys (BSE in cattle) and describe the experiments you would propose to test your hypothesis."

Final Exam

The final exam will be a moderated oral discussion. The class will be randomly divided into thirds and each third will be tested on given day. Each student will be selected asked at least one question covering one or more of the fundamental principles learned in the course. The response will be graded on the student's ability to recall fundamental principles (10%) and incorporate them into a coherent, logical, well reasoned answer (20%). As part of the oral discussion format, the student will be expected to respond to questions of from other students. All students are expected to participate in the discussion by asking questions or participating with the student (5%).

Grading

60% of the final grade will come from performance on exams
15% for each of the 4 exams
5% of the final grade will come from ad hoc take home assignments
35% of the total grade will come from the oral final

Make-up exams will be given to students with acceptable excuses within three days of the student returning to class. All unexcused absences on test dates will result in grades of 0 for that test. The only absences authorized are:

(a) ABSENCE FOR A UNIVERSITY-APPROVED FIELD TRIP OR ACTIVITY--This must be cleared one week in advance of the exam to be missed or a grade of zero will be assigned for the missed examination.
(b) ABSENCE FOR A DEATH OR SERIOUS ILLNESS IN THE IMMEDIATE FAMILY
(c) ABSENCE RESULTING FROM PERSONAL ILLNESS WITH A NOTE FROM A DOCTOR

Grading Scale

Grade	Percentage
A	100---92.0
A-	90.0- 91.9
B+	86.0 – 89.9
B	82.0 - 85.9
B-	80.0 - 81.9
C+	76.0 - 79.9
C	72.0 - 75.9
C-	70.0 - 71.9
D+	66.0 - 69.9
D	62.0 - 65.9
E	0.0 ---55.9

No curves will be used for this course.

Statement on Ethics

Academic misconduct is defined by Ohio State University rules as " any activity that tends to compromise the academic integrity of the institution, or subvert the educational process". (Rule #3335-31-02). Examples include violation of program or course rules stated in the syllabus, cheating on tests, plagiarizing, dishonesty in reporting research results and alteration of grades or forms.

Statement on Disability

Students who have a disability that can be accommodated are encouraged to confidentially notify either professor to discuss the student's needs.

Bibliography

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Pietrzak, M., M.L. Greaser, and A.A. Sosnicki. 1997. Effect of rapid rigor mortis processes on protein functionality in Pectoralis major muscle of domestic turkeys. J. Anim. Sci. 75:2106-2116.

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Tidyman, W. E., L. A. Moore, and E. Bandman. 1997. Expression of fast myosin heavy chain transcripts in developing and dystrophic chicken skeletal muscle. Dev. Dyn. 208:491-504.
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Wilding, P., N. Hedges, and P.J. Lilliford. 1986. Salt-induced swelling of meat: The effect of storage time, pH, ion-type, and concentration. Meat Sci. 18:55-75.
Yamamoto, K. 1988. Effect of H-protein on the formation of myosin filaments and light meromyosin paracrystals. J. Biochem. 103:274-280.
Yasui, T., M. Ishioroshi, and K. Samejima. 1982. Effect of actomyosin on heat-induced gelation of myosin. Ag. Biol. Chem. 46:1049-1059.

Animal Sciences 555.02
Meat Processing

Instructor: Dr. Lynn Knipe
122 Animal Science Building
(614)292-4877
E-mail: <knipe.1@osu.edu>

Office hours: Open for student questions at nearly any time, but encourage students to make appointments, leave voice mail or send e-mail messages.

Course Outcomes:

After completing this course, students will be able to:

- list and describe processed meat product types and characteristics of each.
- identify and recommend the types of meat and non-meat ingredients which would be used in various types of products, in order to formulate new products.
- explain quality differences in raw materials and the resulting effects on finished processed product quality.
- calculate yields, levels of incorporation of ingredients, product costs, etc.
- follow ever-changing marketing trends, and explain changes needed in products to fill market needs.
- describe the functions of non-meat ingredients used in meat processing.
- compute least-cost formulations for meat products.
- subjectively evaluate and objectively analyze meat product quality and trouble-shoot problems.
- communicate effectively with others in the meat industry.
- assess new processed meat technology as it becomes available.
- assess strengths, impact, and feasibility of current food safety regulations and proposed changes.
- develop a HACCP plan.
- discuss and debate the major issues facing the processed meat industry.
- make recommendations regarding safe handling of processed meat products from processing plant to the final consumer.

Recommended text: Copies of selected materials will be given out in class.
Other references:

Principles of Meat Science, M. D. Judge, E. D. Aberle, J. D. Forrest, H. B. Hedrick and R. A. Merkel, Kendall/Hunt Publishing Company.

Handbook of Meat Product Technology, M. D. Ranken, Blackwell Sci.
Meat and Poultry Magazine
Meat Processing Magazine
National Provisioner Magazine

Animal Sciences 555.02
Meat Processing

Grading:

Midterm exams (2@ 100 pts.)	200 pts.
Lab Reports	100 pts.
Quizzes (5 To Be Announced)	50 pts.
Product Development Project	100 pts.
Technology Update Presentations (Extra points)	50 pts. possible
Final Exam	150 pts.
Total	600 pts.

Students can get up to 50 pts. (10 pts. each) added to their total points for presenting brief summaries of current magazine, journal, newspaper, etc., articles on meat processing topics, or writing newspaper Editorials, USDA regulatory comments, etc.

Guaranteed Curve (have normally adjusted curve at end of quarter):

94% and above (of 600 total points)	A
90-93%	A-
87-89%	B+
83-86%	B
80-82%	B-
77-79%	C+
73-76%	C
70-72%	C-
67-69%	D+
63-66%	D
<63%	E

Midterm exams (100 points each) will cover all material presented in class and handouts. Exam questions will be a variety of multiple choice, true/false, short answer, essay, etc., and will focus more on real world problem solving, than rote memorization.

Miscellaneous Reports (10 pts. each) will include completed lab report form for each lab, Product Development Project Idea/Plan, First Draft of Product Development Presentation and Field Trip Report.

Quizzes (10 points each) will given at beginning of 5 lab sessions (to be announced)

Product Development Project Each student will be assigned a product, as in a product development division of a company, and asked to develop this product, using any and all resources that are available. A brief written report is to be written on each product, followed by a presentation of the product at a Product Show. The report should include a description of the product request, a description of the final product (e.g., size, casing, seasoning, etc., used, yields, fat content, sensory results, cost per pound, etc.), and recommendations for company action on this product.

Final Exam Two thirds will cover material since last exam and another one third comprehensive over entire quarter.

Academic Misconduct Any suspected cases of academic misconduct will be reported to the Committee on Academic Misconduct. Academic misconduct includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with all graded materials (exams, quizzes, reports, etc).

Animal Science 555.02
Meat Processing
Fall Quarter, 2004
Room 117, Animal Science Building

			Lecture 11:00 a.m.	Laboratory 11:00 a.m. – 1:00 p.m.	Tab #
Sept.	22	W	Introduction to Meat Processing		
	23	Th		Lab Proc's & Safety, Lab Tour, Insp'n Req's, Product Sampling	1
	24	F	Product Types		
	28	T		Pre-Rigor Fresh Sausage Processing	
	29	W	Raw Material Characteristics		
	30	Th		Preblending and Smokehouse Operations **(Product Drawing)**	2
Oct.	1	F	Chemistry of Meat Processing, Quiz # 1		
	5	T		Ground, Cooked Sausage Processing	
	6	W	Chemistry, Cont'd		
	7	Th		Emulsified Sausage Processing	3
	8	F	Chemistry, Cont'd		
	12	T		Fermented and Dried Sausage Processing, **Quiz # 2** **(Product Descriptions Due)**	
	13	W	Functions of Non-Meat Ingredients		
	14	Th		Non-Cured (Roast Beef, Turkey Breast) Whole Muscle Processing	4
	15	F	**Exam #1 – 100 pts.**		
	19	T		Cured Whole Muscle (Ham, Turkey Ham, Corned Beef, Bacon) Processing	
	20	W	Non-Meat Ingredients, Cont'd.		5
	21	Th		Microbiology and Product Safety	
	22	F	Non-Meat Ingredients, Cont'd, **Quiz # 3**		

			Lecture 11:00 a.m.	Laboratory 11:00 a.m. – 1:00 p.m.	Tab #
	26	T		HACCP Principles	
	27	W	HACCP Implementation		
	28	Th		Marinated and Precooked Products **(Product Plan Due)**	6
	29	F	Food Service Demands for Protein Products – Tim Lawlis, Bob Evans Farms		
Nov.	2	T		Reduced Fat Product Processing, **Quiz #4**	
	3	W	Spices and Seasonings		
	4	Th		Developing Spice Formulations Dr. Rick Matulis, Givaudan Flavors	7
	5	F	Thermal Processing		
	9	T		Processing Regulations Dr. Mike Hockman, ODA MIA	
	10	W	**Exam #2 – 100 pts.**		8
	11	Th		Veteran's Day **Industry Field Trip – All Day**	
	12	F	Listeria Control		
	16	T		**Industry Field Trip – All Day**	
	17	W	Product Show Update and Product Recall Programs		
	18	Th		Packaging Innovations Jay Wilson, Cry-O-Vac	9
	19	F	Corporate New Product Development Steve Garber, Bob Evans Farms **(Project Status Report Due, Quiz # 5)**		
	23	T		Processed Product Analysis	
	24	W	Least Cost Formulations		
	25	Th		Thanksgiving Day - No Class	10
	26	F	No Class – Holiday		
	30	T		Project Completion **(Draft of Product Report Due)**	
Dec.	1	W	Troubleshooting Defects		11
	2	Th		***Product Show*** **– 100 pts.**	
	3	F	Ethics and the Issues Facing the Industry, **Quiz # 6**		
	9-12	TBA	**Final Exam** – 150 pts.	**Final Project Report Due**	

ANIMAL SCIENCE 555.03

BRANDED MEAT PRODUCTS

4 Credit Course
Meeting Tuesday and Thursday Afternoons
3:00 – 5:15 PM

INSTRUCTORS:

Henry Zerby
122A Animal Science
614-688-4584

Francis Fluharty
112 Gerlaugh Hall
330-263-3904

TEXT: There will be assigned reading from various literature sources. Therefore, information over which students will be examined will come from lecture, assigned reading and class discussions.

Recommended References:
The Meat Buyers Guide- National Association of Meat Purveyors, Reston, VA
Meat Evaluation Handbook- American Meat Science Association, Savoy, IL

OBJECTIVES:

To develop a critical thought process that allows students to understand the decisions that are involved in development of meat-based value-added products, especially products for niche markets.

PREREQUISITES:

Junior Standing; ANIM SCI 200; ANIM SCI 355.01; AEDE 200
Note: Although not a prerequisite, AEDE 422 Economics of the Livestock-Meat Industry, is also recommended as a course to provide background information

GRADING:

Examinations (2; 100 points each)	45%
Presentation (100 points)	25%
Paper (100 points)	25%
Unannounced quizzes	5%

At the conclusion of the quarter the sum of all points awarded to each student will be divided by the sum of the total possible points. The percent resulting from this calculation will be applied to the table to the right to determine the final grade.

Final grades will be determined using the following scale:

A	100---90.0
A-	88.0 - 89.9
B+	86.0 - 87.9
B	81.0 - 85.9
B-	78.0 - 80.9
C+	76.0 - 77.9
C	70.0 - 75.9
C-	64.0 - 69.9
D+	60.0 - 63.9
D	56.0 - 59.9
E	0.0 ---55.9

Any student who feels s/he may need an accommodation based on the impact of a disability should contact me privately to discuss your specific needs. Please contact the Office for Disability Services at 614-292-3307 in room 150 Pomerene Hall to coordinate reasonable accommodations for students with documented disabilities.

ATTENDANCE:
Students are expected to attend all class sessions. Class participation will be taken into account when assigning the final grade (attendance, group work, and class discussion). If a class session is missed, it is the student's responsibility to obtain materials and take the responsibility for gaining an understanding of the subject matter that was the focus of the class that was missed. Make-up exams will be allowed for students with acceptable excused absences from class. Excuses should be provided within 1 to 3 days after the student returns to class, depending upon the circumstances of the absence. ***Prior notification of an absence on the day of an exam is requisite. Unannounced quizzes may be given periodically during the quarter.***

ACADEMIC INTEGRITY:
Academic misconduct (plagiarism, cheating, and other forms of misconduct as defined by the university) will not be tolerated in this course. According to Faculty Rule 3335-31-02 Academic Misconduct is defined as any activity which tends to compromise the academic integrity of the institution or subvert the educational process. Please see the Student Resource Guide or the instructor if you have questions about this policy.

COURSE OUTLINE (LECTURE)

Lecture	Description
1 (April 2)	Review syllabus and general overview Meat and non-meat raw materials - Wholesomeness - Functionality - Availability - Specifications - Legal limits - Price
2 (April 4)	How consumers influence the production of niche meat products - Assessing the needs and desires of consumers of niche meat products (research, focus groups, interviews, etc.) - Philosophy of the people involved in enterprises that manage the production of niche meat products for human diets - Changes in consumer attitudes as they assess meat products as nutrients for their diets Rule 1: Consumer is always right Rule 2: Refer to Rule 1

Lecture	Description
3 (April 9)	Evaluate varying types of meat production and processing systems and how these dictate the type of niche meat product that the enterprise develops - Meat Production Enterprise Structures - Long term growth and success as compared with short term gain and recognition - Optimum growth with maximum integrity - Pull as compared with push enterprise strategy - Monitoring and compliance systems
4 (April 11)	Philosophies in developing meat production enterprise - Establishing consumer demand for the meat products before involving the production segment of meat producing enterprises - Niche meat enterprises (for-profit as compared with not-for-profit) - Volume of meat product requirements for economic viability and sustainability ***Form groups for group projects***
5 (April 16)	Types of meat product certification and verification programs, Guest lecture - Cara Gerkin, USDA/AMS
6 (April 18)	Styles of operation for niche meat product enterprises - APR as compared with blanket sales - Meat product name/logo development - Distinctive as compared with descriptive meat products - Mainstream as compared with niche meat product sales ***Discussion section as a class, followed by group meetings with help available from instructors as students work on group projects***
7 (April 23)	Trademark licensing as compared with owning the niche meat product
8 (April 25)	Structuring of the enterprise to fit the mission - Producer owned as compared with private owned • Advantages/disadvantages • Structure differences • Industry/academia relations and support ***Review - Discussion Session (tying it all together)***
9 (April 30)	**Exam 1**

Lecture	Description
10 (May 2)	Enterprise representative will describe niche meat products that have been developed by the company with which they work, Guest lecture - Don Knore, Vice President, Cattle Procurement, Laura's Lean Beef (niche beef product company)
11 (May 7)	Vertical as compared with horizontal integration in the meat product industry - Producer owned as compared with private
13 (May 14)	Public relations involved with niche products, Guest lecture - Deb Leonard, Certified Angus Beef
14 (May 16)	Niche meat product trademark development, legal defense mechanisms, information systems role in monitoring/compliance, Guest lecture - Brent Eichar, Certified Angus Beef ***Abstracts due at this class period***
15 (May 21)	Global considerations in development of brand-labeled meat products, Guest lecture - Maggie Hodge, Certified Angus Beef
16 (May 23)	Characteristics of a successful leader in the niche meat product sector, Guest Lecture - Mick Colvin (retired CEO and founder of Certified Angus Beef)
17 (May 28)	Value-added meat products, Guest Lecture - Brett Erickson, Certified Angus Beef
18 (May 30)	Discussion; Final Assistance on papers and presentations
19 (June 4)	***Presentations***
20 (June 6)	***Presentations***
Final (June 11)	***Papers Due & Exam 2***

Important Points to Remember

A) Make-up exams will be at the discretion of the instructor. If a student foresees that they will be missing an exam, please notify the instructor or teaching assistant as early as possible. Be sure that the notification is made prior to missing the exam.

B) ***No*** late assignments or make-up exams will be acceptable unless arrangements have been made previously.

C) Class attendance is of the utmost importance in this class because of the prevalence of guest lecturers who have been highly successful in the niche meat product industry. If a student is aware that they will be absent for a lecture, please notify the instructor or teaching assistant before the absence occurs.

D) If a student is involved in any extracurricular activity that requires them to be absent from the class, it will be their responsibility to provide the instructor with a hard copy of information indicating involvement in this activity within the first two weeks of the quarter.

Abstracts

Each group of pre-assigned students will submit an abstract giving a short over view of the company that they have proposed to develop, which will be based on production of a niche meat product. The abstract should include the title of the product/company, mission statement, objectives of the company, and definition of products and services of the business. The abstract should be 500 words or less. Each group of students should provide a disk copy and paper copy of their abstract.

Group Presentation

Topics to be covered in the presentation:

Mission and Vision	Product Specifications
Targeted Consumer Group	Legal Support
Size and Scope of Operation	Label and Promotional Material
Time Line	Product (taste panel of product)

Individual Papers

Each student in the class will be responsible for writing a paper on the development of their group's niche meat product/company. The student will be required to describe the mission and vision of the company as well as the enterprise structure. In addition to these two areas, students must cover two additional areas from the following list: specifications, niche as compared with mainstream (consumer target), legal, people (scope of number of people needed to conduct daily operations), labeling and promotion. The paper should be between six (minimum) and 10 pages (maximum) in length. Figures and graphs should be included within in the 10-page maximum, however; there is a required minimum of six pages of text. All papers should be single spaced with 12-point font and 1 inch margins. Include a title page with name, group and niche meat product/company name.

AS 618 Molecular Events in Tissue Growth

Instructor: Dr. Sandra G. Velleman
Rm 213 Gerlaugh Hall
Wooster, OH 44691
PH: 330-263-3905
FAX: 330-263-3949
E-mail: velleman.1@osu.edu

Class will meet Tuesday and Thursday for 4 credit hours during the spring quarter from 1:00-2:48PM in Parker Food Science Building Room 114.

March 30, 2004 to June 3, 2004

Syllabus:

DATE	TOPIC
	A. Embryonic Development
March 30	Class Organization
April 1	Fertilization A. acrosome reaction B. activation egg metabolism C. maternal inheritance and translational control
April 6	Creating Multicellular Organisms
April 8	Early Vertebrate Development A. gastrulation B. formation of ectoderm, mesoderm, and endoderm
April 13	Cell-Cell Interactions A. cellular communication molecules (cadherins, CAMS) B. cell migration C. growth factors
April 15	Tissue Induction A. formation of organ systems Activation of Genes (chromatin)
April 20	Tissue Pattern Formation A. homeotic genes Transcriptional Regulation A. MyoD family B. Other transcriptional regulators

Date	**Topic**
April 22	How Do We Control Tissue Size? A. myostatin Calpain Exam review time
April 27	***Midterm***
B. Tissue and Organ Development: Student Topic Presentations	
April 29	Extracellular Matrix A. cartilage and bone
May 4	Student Presentation (Cell-cell interactions)
May 6	Limb Development
May 11	Student Presentation (Extracellular matrix)
May 13	Muscle Development
May 18	Student Presentation (Regulation of Growth)
May 20	Nervous system
May 25	Student Presentation (Transcriptional Control Mechanisms
May 27	Dynamics of Gene Expression
June 1	Student Presentation (apoptosis)
June 3	***Final Exam***

GRADING:
Midterm=30%; Final=30%; In Class Presentation=30%; Class Participation=10%

Statement of Academic Misconduct: Students enrolled in this class are subject to the provisions of the Code of Student Conduct which is published by the Office of Student Life. The code is published annually in the Student Handbook. According to Faculty Rule 3335-31-02 Academic Misconduct is defined as any activity which tends to compromise the academic integrity of the institution or subvert the educational process.

Any material evaluated for grading (exams and presentations) must represent your own work. Examinations will be closed book and no copying is allowed. Although the in class presentation may require you to work with someone else, the material you present is from your own work. Violations of this standard will be referred to the Committee on Academic Misconduct.

Grading Distribution: 92-100 pts=A; 90-91.9 pts=A-; 88-89.9=B+; 82-87.9=B; 80-81.9 pts=B-; 78-79.9=C+;72-77.9=C; 70-71.9; pts=C-1; 68-69.9=D+; 62-67=D; 60-61.9=D-; and < 60 pts=F.

Disability Statement: Any student who feels she or he may need an accommodation based on the impact of a disability should contact me privately to discuss your specific needs. Please contact the Office for Disability Services at 614-292-3307 in room 150 Pomerene Hall to coordinate reasonable accommodations for students with documented disabilities.

Eating during class: AS 618 is taught around lunch time and the eating of lunch often disturbs the concentration of other students. Please limit your food during class to only a beverage. We will take a 10 min break at the halfway point of the lecture, during this time you may eat a snack.

MICROBIOLOGY 509: BASIC AND PRACTICAL MICROBIOLOGY
MWF 1:30-2:18, Campbell Hall 200
The Ohio State University, Dept. of Microbiology, 484 W. 12th Avenue
Lecture Syllabus, Winter 2005

Prerequisite: Biology 101, 113, or H115 This is a GEC Natural Science Course.

Instructor: Dr. Madhura Pradhan,
E-mail: pradhan.2@osu.edu , Phone: 292-1196 (office)
Office: Room140, Riffe Building, 496 W. 12th Ave.
Office Hours: MWF 2:30-3:30. I may also be available after the lecture to answer the questions.

Textbook: Microbiology: A Human Perspective, 4th ed. by Nester *et al* (customized version). The McGraw-Hill Publishing Co., Inc., New York

NOTE: THE FOLLOWING SCHEDULE IS SUBJECT TO CHANGE.

Date	Topic	Chapter(s)
Jan. 3	Introduction	
Jan. 5	Humans and the Microbial World	1
Jan. 7	Microscopy and Cell Structure	3
Jan. 10	Microscopy and Cell Structure	3
Jan. 12	Dynamics of Prokaryotic Growth	4
Jan. 14	Dynamics of Prokaryotic Growth	4
Jan. 17	**Martin Luther King Day-No Classes**	
Jan. 19	Metabolism: Enzymes Review	6
Jan. 21	Metabolism: Central Metabolic Pathways	6
Jan. 24	Metabolism: Fueling Cell Growth	6
Jan. 26	The Diversity of Prokaryotic Organisms	11
Jan. 28	The Eukaryotic Members of the Microbial World: Fungi	12 (pp 307-312)
Jan. 31	**Exam I**	
Feb. 2	Viruses of Bacteria	13
Feb. 4	Viruses, Prions and Viroids	13,14
Feb. 7	Genetics Review: from DNA to Protein	7
Feb. 9	Bacterial Genetics	8
Feb. 11	Bacterial Genetics /Genetic Engineering: Applications	8,9
Feb. 14	Control of Microbial Growth	5
Feb. 16	Control of Microbial Growth	5
Feb. 18	Antimicrobial Medications	21
Feb. 21	**Exam II**	
Feb. 23	The Innate Immune Response	15
Feb. 25	The Innate/Adaptive Immune Response	15,16
Feb. 28	Applications of Immune Responses: Vaccines	17 (pp 419-426)
Mar. 2	The Adaptive Immune Response	16
Mar. 4	Immunologic Disorders	18
Mar. 7	Host-Microbe Interactions	19
Mar. 9	Epidemiology	20
Mar. 11	Epidemiology and Nosocomial Infections	20
MAR. 14	**FINAL EXAM (Monday), 1:30-2:30pm, Campbell Hall, 200**	

Materials Required for Lab:

Danford, C. and E.A. Wrobel-Boerner. 2002. Laboratory procedures for introductory microbiology. The Ohio State University, Columbus, OH.

This laboratory manual is available ONLY at the Neil Ave. Cop Ez located at 1664 Neil Avenue (next to McDonald's), and you will need to bring it to the first lab session.

Goals and Objectives of this course:

1. Learn to appreciate the roles of microorganisms in basic science, everyday life, health and disease.
2. Have experience with basic laboratory procedures and aseptic technique.

Attendance:

Laboratory attendance is required. Please refer to the lab manual for attendance policy.

Attendance in lecture is highly recommended. **You are responsible for all the material covered in lecture, which includes all handouts, additional assignments, and announced schedule changes.**

Exam Policy:

All exams are as scheduled. Students with excusable conflicts need to contact Dr. Pradhan at least two weeks ahead of the regularly scheduled exams. Should you miss an exam and have a valid excuse, you must contact Dr. Pradhan and provide a written documentation for your absence in order to be eligible to take a make-up exam. You may be allowed to take a make-up exam but your scores from the make-up will be counted towards your final grade only after you provide an acceptable written excuse. Also note that the format of the make-up exam may be different than the regular exams. You must make up all the missed exams **within a week** of the regularly scheduled exams-No Exceptions!

Guidelines for the Final Grade:

Exam I	80 pts.
Exam II	80 pts.
Final	80 pts.
Laboratory	160 pts.
Final Total	**400 pts.**

Final Total	Grade	Final Total	Grade
372-400	A	308-319	C+
360-371	A-	292-307	C
348-359	B+	280-291	C-
332-347	B	268-279	D+
320-331	B-	240-267	D

NOTE: The above is a guideline and may be subject to change.

If you have any condition that requires special attention, please inform me immediately in order that the appropriate arrangements can be made. This includes any physical disability that may require special facilities or condition that may require extended examination time or other testing conditions.