

 ORIGINAL

APPROVAL FORM FOR  
**COURSES RECEIVED**  
MISSISSIPPI STATE UNIVERSITY

3/7/11

NOTE: This form is a cover sheet that must accompany the course change proposal. The actual proposal should be prepared in accordance with format requirements provided in the *Guide and Format for Curriculum Proposals* published by the UCCC. Both cover sheet and proposal should be submitted, along with all required copies, to UCCC, Butler-Williams Building, Suite B, 100 Walker Road, Mail Stop 9699 (325-0831).

College or School: Ag & Life Sciences

Department:

Contact Person: Ty Schmidt

Mail Stop: 9815

E-mail: TSchmidt@ads.msstate.edu

Nature of Change: Add

Date Initiated: 6 Jan 11 Effective Date: 1 Jan 12

Current Listing in Catalog:

Symbol Number Title

Credit Hours

( )

Current Catalog Description:

New or Modified Listing for Catalog:

Symbol Number Title

Credit Hours

ADS 4313/6313 Advanced Science of Muscle Foods

( 3 )

New or Modified Catalog Description:

Exploration of the ultra-structure of muscle (pre and post harvest), and the microbiology, inspection and safety, nutritional properties, and sensory characteristics of muscle. (Same as FSNHP 4313/6313)

Approved:

Terry E. Kiser

Department Head

Date:

1-6-11



Chair, College or School Curriculum Committee

1-24-11

Walter Taylor / Joseph M. Hopper

Dean of College or School

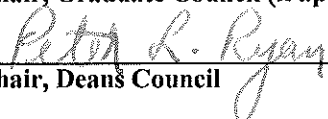
2-15-2011



Chair, University Committee on Courses and Curricula

4.13.11

Chair, Graduate Council (if applicable)



Chair, Deans Council

May 20<sup>th</sup>, 2011



**Mississippi State**  
UNIVERSITY

Department of Animal and Dairy Sciences  
Box 9815  
Mississippi State, Mississippi 39762  
Phone (662)325-2802  
Fax (662)325-8873

January 7, 2011

University Courses and Curricula Committee:

A new course called ADS/FNH 4313/6313 Advanced Science of Muscle Foods has the full support of the Animal and Dairy Sciences department. Please consider the supporting proposal for consideration.

Thanks,

Carolyn E. Huntington, Ph.D.  
Undergraduate Coordinator & Instructor,  
Animal and Dairy Sciences  
Interim Academic Coordinator,  
College of Agriculture and Life Sciences  
201 Bost, Mailstop 9760  
Mississippi State, MS 39762  
Office: (662) 325-7752  
Fax: (662) 325-8580

A handwritten signature in cursive script that reads "Carolyn E. Huntington".

Carolyn E. Huntington  
Chair, ADS Undergraduate Curriculum Committee

## Course Addition

Addition of the New Course Advance Science of Muscle Foods (ADS 4313/6313)

Department of Animal and Dairy

### 1. Catalog Description

ADS 4313/6313. Advanced Science of Muscle Foods. (3) (Prerequisite: Junior standing or greater, ADS/FSNHP 3314, CH 1223, and/or Instructor Consent). Three hours lecture. Exploration of the ultra-structure of muscle (pre and post harvest), and the microbiology, inspection and safety, nutritional properties, and sensory characteristics of muscle. (Same as FSNHP 4313/6313)

### 2. Detailed Course Outline

Please see attached proposed course syllabus

### 3. Method of Evaluation

This course is being proposed as a split level 4000/6000 course.

#### **In-Class (Undergraduate)**

For undergraduate students evaluation will be based upon four hourly exams (short answer and fill in the blank) and a comprehensive final exam

#### **Out-Of-Class (Undergraduate)**

Review Paper of research on assigned specific topic in meat science paper

Four Exams = 150 points each

Review of Research Paper = 100 points

Comprehensive Final Exam = 200 points

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*Total Points* *900*

#### **Grading: Undergraduate**

	<u>Letter Grade</u>
≥ 810	A
≥ 720	B
≥ 630	C
≥ 540	D
< 540	F

#### **In-Class (Graduate)**

For graduate student's evaluation will be based upon four hourly exams (essay), presentation of research paper, and a comprehensive final exam (essay)

**Out-Of-Class (Graduate)**

Review Paper of research on specific topic in meat science (graduate students will chose their own topics) and preparation of presentation of research review paper.

**Points Distribution: Graduate**

Four Exams = 150 points each

Review of Research Paper (200pts) and Presentation (100pts) = 300 points

Oral Comprehensive Final Exam = 200 points

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**Total Points** **1100**

**Grading: Graduate**

	<u>Letter Grade</u>
≥ 1023	A
≥ 913	B
≥ 803	C
≥ 693	D
< 693	F

***Research Paper***

***Undergraduate:*** The term paper is to be 6 to 8 pages in length. Term papers should be prepared using the style and format of the American Journal of Animal Science, which can be found at: <http://jas.fass.org/cgi/content/full/86/1/DC2>

***Graduate Students:*** The term paper is to be 12 to 14 pages in length. Term papers should be prepared using the style and format of the American Journal of Animal Science, which can be found at: <http://jas.fass.org/cgi/content/full/86/1/DC2> . Graduate students will also be required to present their research topic to the ADS/FSNHP faculty, staff, and students during a lecture series that will be scheduled based upon the schedule of the students. This time period will be scheduled outside of the regularly scheduled class periods. The lecture should be prepared as a 30 minute lecture covering the topic which they have chosen.

Research papers will be graded on scale reported in Table 2 (undergraduate) and Table 3 (graduate). Graduate presentations will be graded by the faculty of the department using the rubric reported in Table 4 (Please see attached tables). The score for each graduate presentation will be the weighed with 60% of their grade being from the faculty review (average score for all faculty present) and 40% of their score will be the result of the instructors score.

**4. Justification and Outcome**

This course will serve as the advanced science based meat science course for the

undergraduate and graduate student in Animal and Dairy Sciences as well as Food Science, Nutrition and Health Promotion.

The addition of this course will also allow us to have a competitive program similar to our peer universities. Peer institutions include Texas A&M, University of Florida, University of Georgia, Auburn, University of Kentucky, Texas Tech University, Kansas State University, University of Missouri, Colorado State University, University of Arkansas, and University of Illinois.

Material in this course will be all new material. The Textbook for this class is "Applied Muscle Biology and Meat Science" by Min Du and Richard J. McCormick. Please see Table 1. Of the syllabus for a detailed outline of the topics covered in this proposed class.

This proposed course was offered in the Spring of 2010 as a special topics class. Feedback from the students was positive for both the content of the class and the required text.

Upon completion of this course students will have an in-depth understanding of the basic science related to meat science. Students will have a complete and thorough understanding of muscle contraction, biochemical changes associated with meat color, protein turnover and protein synthesis within meat animals, development of muscle, adipose, and collagen, and regulation of glycolysis and meat quality.

The field of Muscle Foods has grown over the last 20 years; however, the curriculum here at Mississippi State has not followed with this change. Twenty years ago, there was a limited amount of science related to the processing of animals into high quality protein sources. If we look at the primary textbook utilized by professors of muscle food 20 years ago, we had one, *The Meat We Eat*; researchers in the field of muscle foods were simply Meat Scientist. Today we have seen an exponential change in the area of muscle foods. The area of muscle foods can now be divided into multiple categories, including muscle biologist, mycologist, microbiologist, sensory scientist, molecular meat science, muscle food chemist, further processed muscle scientist, and even human nutrition. With this exponential growth, the need to further prepare our students to pursue jobs in this arena has changed. The justification for the addition of this course is to provide students with a more in-depth study of the science related to muscle foods.

The change in the science associated with muscle foods has been driven by the change in the demands of the consumers. In the 1950's researchers were simply concerned with the quality and yield of meat animals. Today, we have a high-tech industry that provides high quality proteins foods to the world. In today's supermarket we no longer have only the fresh meat counter, we have meat products all over the store; ready-to-eat, low fat, shelf-stable, and low salt, just to name a few. In addition to the new look of the meat in our supermarkets; the industry has a huge demand for students with a background in meat science to assist with the improvement of food safety. In today's job market there are enormous opportunities for our students to secure high paying positions within the meat

industry, this we need to increase our emphasis on the area of meat science to make our students more marketable to this industry.

**5. Academic Misconduct**

Students will sign the MSU Honor Code on the first day of class and will also acknowledge reading and understanding the honor code on all exams (Graduate and Undergraduate students)

**6. Target Audience**

Animal Science and Food Science Students with an interest in the meat industry

**7. Support**

Please see attached letters of support from the department curriculum committees for both Animal Science (Dr. Carolyn Huntington) and Food Science, Nutrition, and Health Promotion (Dr. Wes Schilling).

**8. Instructor of Record**

Dr. Ty Schmidt

**9. Graduate Students Requirements**

For graduate student's evaluation will be based upon four hourly exams (essay), and review of research paper and presentation of research paper, and a comprehensive final exam (essay). In comparison, undergraduate test will be multiple choice, fill in the blanks, and some short answer. Grading criteria for the Graduate research paper and presentation are reported in Table 3 and 4.

**10. Planned Frequency**

The course will be offered annually during the Spring semester

**11. Explanation of Duplication**

There is not duplication of material in this course. Content in this course will build upon the basic information that the students receive in Meats Processing.

**12. Method of Instruction Code**

C and F

**13. Proposed CIP Number**

01-0302

**14. Proposed 24-Character Abbreviation**

Adv. Sci. Muscle Foods

**15. Proposed Semester Effective**

Spring 2012

**16. Other Appropriate Information**

The required textbook for this class will be Applied Muscle Biology and Meat Science, by Min Du and Richard J. McCormick

**17. Proposal Contact Person**

Ty Schmidt

# **Advanced Science of Muscle Foods**

## **Syllabus and Class Schedule**

**ADS-FSNHP 4313/6313**

**Fall 2009**

*Class Time:* Tuesday -- Thursday 9:30 – 10:45

*Location:* Ballew 119

*Instructors:* Dr. Ty Schmidt  
4030 Wise Center  
662-325-2934  
TSchmidt@ads.msstate.edu

*Office Hours:* Monday-Friday: Open door policy (doors open come on in)

**\*\*Please do not come in before 7:00 AM\*\***

*Pre-Requisites:* ADS-FSNHP 3314 and CHEM 2503 or Instructors consent

*Required Text:* Applied Muscle Biology and Meat Science, Min Du and Richard J. McCormick

### ***Learning Objectives:***

To impart knowledge related to students regarding the science associated with muscle foods. Provide insight into the advanced concepts of muscle growth and development, maturation, metabolism and utilization of muscles. Furthermore, address the functional biochemistry and biological properties of muscle as it relates to a food source will be thoroughly investigated and addressed. Students will emerge from this course with s in-depth knowledge of muscle biology, muscle biochemistry, and meat science.



### ***Learning Outcomes***

Learning outcomes for this course will be as follows: 1), have a general understanding of the growth and development, maturation, and metabolism of muscle pre-harvest, 2) develop an detailed understanding of the physical and chemical aspects of muscle as a high quality food source, 3) enhanced ability to interpret scientific information and present this information in written and verbal forms.

### ***Learning Assessments:***

#### ***Lecture Exams:***

There will be four exams administered during lecture. Each exam will be worth 150 points.

Undergraduate – Multiple Choice, fill in the blank, and some short answer

Graduate Students – All Essay

#### ***Final Exam:***

This exam will be comprehensive and is worth 200 points.

#### ***Research Paper***

***Undergraduate:*** The term paper is to be 6 to 8 pages in length. Term papers should be prepared using the style and format of the American Journal of Animal Science, which can be found at: <http://jas.fass.org/cgi/content/full/86/1/DC2>

***Graduate Students:*** The term paper is to be 12 to 14 pages in length. Term papers should be prepared using the style and format of the American Journal of Animal Science, which can be found at: <http://jas.fass.org/cgi/content/full/86/1/DC2> . Graduate students will also be required to present their research topic to the ADS/FSNHP faculty, staff, and students during a lecture series that will be scheduled based upon the schedule of the students. This time period will be scheduled outside of the regularly scheduled class periods. The lecture should be prepared as a 30 minute lecture covering the topic which they have chosen.

Research papers will be graded on scale reported in Table 2(undergraduate) and Table 3 (graduate). Graduate presentations will be graded by the faculty of the department using the rubric reported in Table 4 (Please see attached tables). The score for each graduate presentation will be the weighed with 60% of their grade being from the faculty review (average score for all faculty present) and 40% of their score will be the result of the instructors score.

***Points Distribution: UNDERGRADUATE***

Four Exams = 150 points each  
Review of Research Paper = 100 points  
Comprehensive Final Exam = 200 points

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***Total Points*** **900**

***Grading: Undergraduate***

	<u>Letter Grade</u>
≥ 810	A
≥ 720	B
≥ 630	C
≥ 540	D
< 540	F

***Points Distribution: GRADUATE***

**Points Distribution: Graduate**

Four Exams = 150 points each  
Review of Research Paper (200pts) and Presentation (100pts) = 300 points  
Oral Comprehensive Final Exam = 200 points

**Total Points** **1100**

**Grading: Graduate**

	<u>Letter Grade</u>
≥ 1023	A
≥ 913	B
≥ 803	C
≥ 693	D
< 693	F

***Attendance:***

Students are expected to attend all class meetings. Attendance is mandatory for all exams. For students with an authorized excused absence, the grade for the missed exam will be determined by the average score for the exams that were taken. **The professor must be notified at least 24 hours prior to this absence.** The only absences that will be authorized are those found at <http://www.msstate.edu/dept/audit/1209.html>

If you do not contact the professor at least 24 hours prior to missing an exam and do not provide approved written documentation you will receive a ZERO for the exam.

***Honor Code:***

“As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do.” Academic Operating Policy and Procedure 12.07 <http://www.msstate.edu/dept/audit/1207A.html>

Any student caught cheating on an exam, stealing, or plagiarizing on group projects will automatically be referred to the Honor Code Council.

Once referred to the Honor Code, it will be out of the hands of the instructor, and left up to a committee of students and faculty to determine the outcome.

***Cell Phone and Electronic Policy:***

In accordance with Academic Operating Policy 10.08 and in order to limit classroom disruptions, as well as to protect against academic misconduct, the use by students of cell phones, messaging devices, and other electronic devices is prohibited. In this class students are required to put cell phones on the silent mode and stow them in their backpacks, purses, or pockets (as long as it is out of sight) while attending class; this is regardless of where class is meeting (classroom, meat lab, or out at the south farm). On quizzes and exams cell phones **may not** be used as calculators or clocks. A copy of AOP 10.08 is available online at <http://www.msstate.edu/dept/audit/1008.html>. All iPods, MP3 players, and other electronic devices must be turned off and stowed in backpacks while in class.

***Laptop Computers:***

Students are not allowed to have their laptop computer out during lectures. This is my policy, and is not open to discussion.

***Hat Policy:***

Students (male and female) are not allowed to wear hats during class.

***Tobacco Policy:***

Tobacco (of any form) is not permitted in Ballew Hall. The use of tobacco is also prohibited in any classroom on the MSU campus.

**Tentative Lecture Topics:**

**Table 1. Lecture Topics**

<b>Lecture Topics</b>	<b>Hours</b>
1) Muscle Structure and Function	6.25
2) Satellite Cell Biology	3.75
3) Adipose Tissue Development	3.75
4) Fetal Programming of Skeletal Muscle	3.75
5) Muscle Fiber Characteristics and Meat Quality	3.75
6) Muscle Protein Turnover	3.75
6) Collagen	3.75
7) Protein degradation Postmortem and Tenderization	3.75
8) Regulation of Postmortem Glycolysis and Meat Quality	3.75
9) AMP-Activated Protein Kinase in Muscle Growth	3.75
10) Meat Color	2.50
<b>Total lecture hours</b>	<b>45</b>

**Table 2. Grading criteria for UNDERGRADUATE research paper**

Paper Element	Points		
	Professional- Very good- 100 to 90% of pts	Good to Average 89 – 70% of pts	Poor 69% of points or less
<b>Title (5% or 5 pts)</b>	Title clear & informative.	Contains elements of scope or purpose	Title tells little about content, argument or scope of work
<b>Introduction (5% or 5 pts)</b>	Establishes purpose, thesis clearly, explicitly. Objective. Captures reader's attention	Less clear. States significance but thesis buried.	Some or no indication: social, temporal & geographic limits
<b>Body Content (30% or 30 pts)</b>	Paper effectively captures reader's attention and communicates purpose, tone and topic.	Paper is generally well written; lacking in purpose or topic	Paper poorly related purpose. Reader distracted.
<b>Organization (10% or 10 pts)</b>	Excellent use of language, ordered and clear links to thesis statement	Some connection to thesis statement. Some lack of clarity	Lack of care, time and effort
<b>Referencing (10% or 10 pts)</b>	Clear consistent use of chosen referencing system. Few formatting errors. No missing sources.	Reliance on non-academic sources. Fairly consistent use of referencing system, several errors in usage. Lacks integration	Serious problems with referencing system, or several systems being used. Plagiarism material not checked for validity
<b>Conclusion (10% or 10pts)</b>	Effectively closes the paper. Ties together all elements = Effectively integrated	Adequate integration and conclusion	Weak conclusion and integration
<b>Format &amp; style (10% or 10 pts)</b>	Grammatically and typographically superior. (No errors or 1 per page)	Grammatical and typographical error (2-3 errors per page)	Significant grammatical and typographical errors (4+ per )
<b>Structure and transitions (20% or 20 pts)</b>	Clear sentences. Variety of paragraph and sentence length. Strong clear leads. Smooth transitions	Sentences somewhat muddled with little variety in length.	Poor grammar in sentence and paragraph structure. Awkward

**Table 3. Grading criteria for GRADUATE research paper**

	<b>Points</b>		
<b>Paper Element</b>	<b>Professional- Very good- 100 -- 95% of pts</b>	<b>Good to Average 94 -- 75% of pts</b>	<b>Poor 74% of points or less</b>
<b>Title (5% or 5 pts)</b>	Title clear & informative.	Contains elements of scope or purpose	Title tells little about content, argument or scope of work
<b>Introduction (5% or 5 pts)</b>	Establishes purpose, thesis clearly, explicitly. Objective. Captures reader's attention	Less clear. States significance but thesis buried.	Some or no indication: social, temporal & geographic limits
<b>Body Content (30% or 30 pts)</b>	Paper effectively captures reader's attention and communicates purpose, tone and topic.	Paper is generally well written; lacking in purpose or topic	Paper poorly related purpose. Reader distracted.
<b>Organization (10% or 10 pts)</b>	Excellent use of language, ordered and clear links to thesis statement	Some connection to thesis statement. Some lack of clarity	Lack of care, time and effort
<b>Referencing (10% or 10 pts)</b>	Clear consistent use of chosen referencing system. Few formatting errors. No missing sources.	Reliance on non-academic sources. Fairly consistent use of referencing system, several errors in usage. Lacks integration	Serious problems with referencing system, or several systems being used. Plagiarism material not checked for validity
<b>Conclusion (10% or 10pts)</b>	Effectively closes the paper. Ties together all elements = Effectively integrated	Adequate integration and conclusion	Weak conclusion and integration
<b>Format &amp; style (10% or 10 pts)</b>	Grammatically and typographically superior. (No errors or 1 per page)	Grammatical and typographical error (2-3 errors per page)	Significant grammatical and typographical errors (4+ per )
<b>Structure and transitions (20% or 20 pts)</b>	Clear sentences. Variety of paragraph and sentence length. Strong clear leads. Smooth transitions	Sentences somewhat muddled with little variety in length.	Poor grammar in sentence and paragraph structure. Awkward