INTRODUCTORY ANIMAL SCIENCE
ANS 131

INSTRUCTOR: Dr. John Michael Mehaffey
             Room 103
             Agriculture Building

OFFICE HOURS: MW 10 – 12 am; TR 11 – 12
               Office: 936-468-4319
               Cell: 806-790-4330
               E-mail: mehaffeyjm@sfasu.edu

LECTURE: TR 8 – 9:15 am Agriculture Room 110

TEXT: Introduction to Animal Science text power points on D2L.
      Introduction to Animal Science: Global, Biological, Social, and Industry

COURSE DESCRIPTION:

This course will explore how the interactions of breed selection, environmental
conditions, mating systems, comparative digestive systems, reproductive
physiology, and nutrition all affect the final product in production agriculture. This
knowledge will allow the student to have a better understanding how livestock
systems function and the impact animal production has on world and human
experience.

Program Learner Outcomes

1. The student will demonstrate competence of technical subject matter areas in
   agriculture including plant and animal sciences, agricultural economics, and
   mechanized agriculture.
2. The student will exhibit problem-solving skills based on quantitative and
   analytical reasoning.
3. The student will demonstrate effective communication skills
4. The student will exhibit leadership and other interpersonal skills needed for
   career placement and advancement.

Student Learning Outcomes

1. Student will demonstrate competence of technical subject matter in animal and
   poultry sciences (ANS 131)
2. The student will demonstrate effective oral and written communication skills
3. The student will exhibit leadership and other interpersonal skills needed for
   career placement and advancement
4. The student will exhibit problem-solving skills based on quantitative and analytical reasoning
5. The student will demonstrate knowledge of farm and ranch skills. (ANS 131)

Objectives

1. To become able to recognize and label the external and internal parts and structure of farm animals
2. To gain a general understanding of the beef, sheep, goat, swine, poultry, companion animal and equine industries
3. To become knowledgeable of terminology used in animal science
4. To gain a basic understanding of nutrition, physiology, genetics, animal health and welfare

Lecture Attendance

Lecture attendance is mandatory and will be taken daily; if you are late you will be counted absent. You will be given three absences, for each absence after three your grade will be reduced by 10%.

Student Academic Dishonesty Policy (4.1)

Academic integrity is a responsibility of all university faculty and students. Faculty members promote academic integrity in multiple ways including instruction on the components of academic honesty, as well as abiding by university policy on penalties for cheating and plagiarism. Definition of Academic Dishonesty: Academic dishonesty includes both cheating and plagiarism. Cheating includes but is not limited to (1) using or attempting to use unauthorized materials to aid in achieving a better grade on a component of a class; (2) the falsification or invention of any information, including citations, on an assigned exercise; and/or (3) helping or attempting to help another in an act of cheating or plagiarism. Plagiarism is presenting the words or ideas of another person as if they were your own. Examples of plagiarism are (1) submitting an assignment as if it were one's own work when, in fact, it is at least partly the work of another; (2) submitting a work that has been purchased or otherwise obtained from an Internet source or another source; and (3) incorporating the words or ideas of an author into one's paper without giving the author due credit. Please read the complete policy at http://www.sfasu.edu/policies/student_academic_dishonesty.pdf

Course Grades Policy (5.5)

Ordinarily, at the discretion of the instructor of record and with the approval of the academic chair/director, a grade of WH will be assigned only if the student cannot complete the course work because of unavoidable circumstances. Students must complete the work within one calendar year from the end of the
semester in which they receive a WH, or the grade automatically becomes an F. If students register for the same course in future terms the WH will automatically become an F and will be counted as a repeated course for the purpose of computing the grade point average. Please read the complete policy at http://www.sfasu.edu/policies/5.5_course-grades.pdf

**Academic Accommodation for Students with Disabilities Policy (6.1)**

To obtain disability related accommodations, alternate formats and/or auxiliary aids, students with disabilities must contact the Office of Disability Services (ODS), Human Services Building, and Room 325, 468-3004 / 468-1004 (TDD) as early as possible in the semester. Once verified, ODS will notify the course instructor and outline the accommodation and/or auxiliary aids to be provided. Failure to request services in a timely manner may delay your accommodations. For additional information, go to http://www.sfasu.edu/disabilityservices/

**Responsible Use of Technology**

It is expected that all students will only use cell phones, PDAs, laptop computers, MP3 players and other technology outside of class time or when appropriate in class. Answering a cell phone, texting, listening to music or using a laptop computer for matters unrelated to the course may be grounds for dismissal from class or other penalties.

**Acceptable Student Behavior**

Classroom behavior should not interfere with the instructor’s ability to conduct the class or the ability of other students to learn from the instructional program (see the Student Conduct Code, policy 10.4). Unacceptable or disruptive behavior will not be tolerated. Students who disrupt the learning environment may be asked to leave class and may be subject to judicial, academic or other penalties. This prohibition applies to all instructional forums, including electronic, classroom, labs, discussion groups, field trips, etc. The instructor shall have full discretion over what behavior is appropriate/inappropriate in the classroom. Students who do not attend class regularly or who perform poorly on class projects/exams may be referred to the Early Alert Program. This program provides students with recommendations for resources or other assistance that is available to help SFA students succeed. Please read the complete policy at http://www.sfasu.edu/policies/student-code-of-conduct_10.4.pdf
<table>
<thead>
<tr>
<th>Week</th>
<th>Tuesday</th>
<th>Thursday</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 – 1/22</td>
<td>Introduction</td>
<td>History</td>
</tr>
<tr>
<td>2 – 1/29</td>
<td>Introduction to Animal Science</td>
<td>The Value of Animals to Humanity</td>
</tr>
<tr>
<td>3 – 2/5</td>
<td>Factors Affecting World Agriculture</td>
<td>Worldwide Systems of Agriculture Production</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Critical Thinking Assignment</td>
</tr>
<tr>
<td>4 – 2/12</td>
<td><strong>Exam I</strong></td>
<td>Introduction to Nutrition</td>
</tr>
<tr>
<td>5 – 2/19</td>
<td>The Gastrointestinal Tract and Nutrition</td>
<td>Feedstuffs Classifications</td>
</tr>
<tr>
<td>6 – 2/26</td>
<td>Genetics</td>
<td>Animal Breeding</td>
</tr>
<tr>
<td>7 – 3/5</td>
<td>Biotechnology and Genetic Engineering</td>
<td>Animal Reproduction</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Critical Thinking Assignment</td>
</tr>
<tr>
<td>8 – 3/12</td>
<td><strong>Exam II</strong></td>
<td>Animal Behavior</td>
</tr>
<tr>
<td>9 – 3/19</td>
<td>NO CLASS</td>
<td>NO CLASS</td>
</tr>
<tr>
<td>10 – 3/26</td>
<td>Animal Health</td>
<td>Market Coordination</td>
</tr>
<tr>
<td>11 – 4/2</td>
<td>Beef and Dairy Cattle</td>
<td>Poultry &amp; Swine</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Critical Thinking Assignment</td>
</tr>
<tr>
<td>12 – 4/9</td>
<td>Sheep and Goats &amp; Horses</td>
<td>Aquaculture &amp; Pets and Companion Animals</td>
</tr>
<tr>
<td>13 – 4/16</td>
<td>Lamoids &amp; Rabbits</td>
<td>NO CLASS</td>
</tr>
<tr>
<td>14 – 4/23</td>
<td><strong>EXAM III</strong></td>
<td>Careers and Career Preparation</td>
</tr>
<tr>
<td>15 – 4/30</td>
<td>Food Safety and Consumer Concerns</td>
<td>Animal Rights and Animal Welfare</td>
</tr>
<tr>
<td>16 – 5/7</td>
<td>Animals in Sustainable Agriculture</td>
<td>PRESENTATIONS</td>
</tr>
</tbody>
</table>

**FINAL EXAM TUESDAY, MAY 14TH @ 8 AM!**

**GRADING SYSTEM:**
A = 90 %
B = 80 - 89 %
C = 70 - 79 %
D = 60 - 69 %
F = LESS THAN 60 %

**POINT SYSTEM:**
4 LECTURE EXAMS  400
D2L QUIZZES      200
3 CRITICAL THINKING ASSIGNMENTS  150
DISCUSSION PARTICIPATION  100
SPECIES PRESENTATIONS  250
ATTENDANCE        100

TOTAL            1200
## TENTATIVE CLASSROOM SCHEDULE

<table>
<thead>
<tr>
<th>Week</th>
<th>Tuesday</th>
<th>Thursday</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 – 1/22</td>
<td>Introduction</td>
<td>History</td>
</tr>
<tr>
<td>2 – 1/29</td>
<td>Animal Science Discussion</td>
<td>How we value Animals in American Society</td>
</tr>
<tr>
<td>3 – 2/5</td>
<td>What we fit in world agriculture</td>
<td>Worldwide Systems of Agriculture Production</td>
</tr>
<tr>
<td>4 – 2/12</td>
<td>Exam I</td>
<td>What is Nutrition?</td>
</tr>
<tr>
<td>5 – 2/19</td>
<td>Differences in the intestinal tract of livestock species</td>
<td>Feedstuffs: In class exercise</td>
</tr>
<tr>
<td>6 – 2/26</td>
<td>What is genetics</td>
<td>What is Animal Breeding</td>
</tr>
<tr>
<td>7 – 3/5</td>
<td>Biotechnology and Genetic Engineering!</td>
<td>Reproduction examples</td>
</tr>
<tr>
<td>8 – 3/12</td>
<td>Exam II</td>
<td>How to control animal behavior</td>
</tr>
<tr>
<td>9 – 3/19</td>
<td>NO CLASS</td>
<td>NO CLASS</td>
</tr>
<tr>
<td>10 – 3/26</td>
<td>Animal Health risks and concerns</td>
<td>How do our livestock markets work?</td>
</tr>
<tr>
<td>11 – 4/2</td>
<td>Beef and Dairy Cattle</td>
<td>Poultry &amp; Swine</td>
</tr>
<tr>
<td>12 – 4/9</td>
<td>Sheep and Goats &amp; Horses</td>
<td>Aquaculture &amp; Pets and Companion Animals</td>
</tr>
<tr>
<td>13 – 4/16</td>
<td>Lamoids &amp; Rabbits</td>
<td>EASTER BREAK</td>
</tr>
<tr>
<td>14 – 4/23</td>
<td>EXAM III</td>
<td>Careers and Career Preparation</td>
</tr>
<tr>
<td>15 – 4/30</td>
<td>Food Safety and Consumer Concerns</td>
<td>Animal Rights and Animal Welfare</td>
</tr>
<tr>
<td>16 – 5/7</td>
<td>Animals in Sustainable Agriculture</td>
<td>GROUP PRESENTATIONS</td>
</tr>
</tbody>
</table>

### Lecture Exams

Lecture exams will consist of material covered prior to each of the three exams in lecture. Material is open to class discussion, presented material and group presentations. Exams will consist of multiple choice, true/false, matching, and short answer questions.

### Discussion Quizzes

Discussion quizzes will consist of material covered in the lecture topics students will review on D2L. The best 20 possible grades will be retained for the students’ 200 possible points. The quizzes will be available on D2L for 24 hours based on the schedule.
Critical Thinking Assignments

Livestock Systems

Students will gain an understanding of global agriculture and thus where certain types of agriculture are practiced and why. The students will have to write a two-page summary over the type of production system they feel would have most likely been used by their ancestors before coming to America.

Reproduction and Nutrition in Livestock

The second assignment will be over reproduction systems and nutrition in the livestock industry. This can cover topics such as Artificial Insemination, Embryo Transfer, In vitro, Natural Selection, Crossbreeding, to rearing systems within different species, or the student can discuss feedstuffs and nutrient requirements of their assigned livestock specie. This will allow the student to further investigate reproduction systems and nutritional needs in the livestock industry, and have a better understanding for why animals are bred and raised in the current manners in the livestock industry. This will allow the student to evaluate the cost involved in the systems and put their quantitative skills to the test to better understand what systems are the most cost effective for animal production.

Animal Health and Types of Livestock

The third assignment will allow the students to discuss the behavioral and health issues associated with their assigned specie of animal. They may choose one health issue or broadly cover several.

Group Projects

Groups will be assigned on August 30, 2018 for students to work with throughout the semester. Each group will be assigned an animal species discussed in text and class. Throughout the semester, the student’s Critical Thinking assignments will be focused on the group specie. The group will gather information throughout the semester on their assigned specie and at the end of the semester produce a poster and give a 10 minute presentation over their specie of animal. The poster/presentation will cover all lecture topics (production systems, nutrition, reproduction, health, behavior, marketing, and any other information found to be of interest), be printed and presented to the class.

Students will be evaluated based on participation throughout the semester by their peers and their involvement in the presentation. A rubric will be presented for grading purposes over the presentations and discussions will be available on D2L for the group to discuss ideas or issues as they see fit. The discussion thread will be monitored by the professor as well to evaluate participation.
Lecture Topic Descriptions

Introduction to Animal Science
Students will be able to define animal science and all of its component parts; describe how, why, and when domestication occurred; give an overview of the distribution of the agricultural animals worldwide; explain the contributions of domestic animals to humans and state why they are so important to life as we know it; and describe the worldwide livestock revolution and its implications.

The Value of Animals to Humanity
Students will describe the value of animal products in providing for the world’s food; explain the current rates of growth or decline of animal products on a worldwide basis; elaborate on the milk-producing species, state their importance to world milk production, and understand what is happening to world milk production; describe the value of eggs in feeding the world’s people; develop a modest understanding of some miscellaneous food uses for the world’s animals; explain the value animal products in the human diet; and give a good overview of all the many nonfood uses humans have for the world’s animals.

Factors Affecting World Agriculture Structure
Students will be able to explain the process of adaptation; list the five major categories of environmental stressors and tell how animals react to them; describe the climatic environments of the world; summarize how climate and natural vegetation are tied together; explain how social and cultural differences affect agriculture; and integrate information on levels of economic and agricultural development to explain how they are linked.

Worldwide Systems of Agriculture Production
Students will gain the ability to identify the broad types of agricultural production systems found worldwide; describe the use of animals within each agricultural type; compare and contrast the livestock industries of developed and developing countries; and differentiate between commercial systems of agriculture and subsistence systems and their goals.

Introduction to Nutrition
Students will define nutrition and understand the reason for studying nutrition; explain what a nutrient is and know the difference between dietary essential and nonessential nutrients, classify the nutrients, and list the 50 dietary essential nutrients; describe the general uses of nutrients in the body and discuss the major factors that affect an animal’s needs for nutrients; explain in detail the three major types of animal trials that nutritionists use; define and explain feedstuff analysis; and summarize the feeds evaluation procedures described in this chapter.

The Gastrointestinal Tract and Nutrition
Students will be able to describe the methods of the breakdown of food; classify digestive systems according to the stomach type and type of diet consumed; describe the steps of digestion; identify the differences and similarities in the
digestive process of animals; explain the importance of the complex stomach of the ruminant and its benefits to the animal; and an understanding of the basic reproduction systems in livestock including anatomy of the male and female, mating, gestation, parturition, and alternative mating systems.

**Feedstuffs Classification**
Students will describe feedstuff classification and identify feedstuff categories and characteristics; and identify the nutritive characteristics in various feedstuff categories.

**Genetics**
Students will explain the role that genetics plays in animal production; describe the location of genes within a cell; explain the process of cellular division that ultimately produces cells containing only half of the genetic information; describe how variation in traits is passed from parent to offspring; describe how gene frequencies change within a population; explain the concept of relationship between individuals; describe several systems of mating individuals; and summarize the implications of genetic engineering.

**Animal Breeding**
Students will define animal breeding and explain its contribution to animal science; describe the general principles of animal breeding as it applies to beef cattle; define heritability and genetic correlations; explain how to use EPDs in beef cattle breeding; describe the uses and benefits of a beef cattle sire summary; describe the general principles of animal breeding as it applies to dairy cattle; gain an understanding of evaluating breeding animals based on performance data, phenotype and genotype; explain why associations among traits are so important to dairy cattle selection; identify goals on traits of emphasis in dairy cattle selection; describe the DHI system and explain its use in dairy cattle selection; list the ways in which swine genetic improvement is similar to and different from the other major species; describe the difference in the way breeds influence the swine industry compared to the other industries; and describe the general principles of animal breeding as it applies to sheep.

**Biotechnology and Genetic Engineering**
Students will describe the magnitude of the biotechnology industry in the United States; define biotechnology and explain how genetic engineering is a part of biotechnology; describe the recombinant DNA technology; describe current and future uses of genetic engineering as it applies to field crop, food crop, and livestock production; describe developing uses of rDNA organisms; explain the regulatory mechanism in place to control genetically engineered organisms; and identify some of society’s concerns about genetic engineering.

**Animal Reproduction**
Students will describe how the endocrine system drives the production of gametes; identify anatomy of the reproductive system; compare and contrast the functions of the male and female gonads; understand conception, pregnancy, and parturition; discuss the considerable influence of the environment on
reproductive function; and describe the uses and advantages of the technologies employed in animal reproduction.

**Animal Behavior**
Students will describe the overall field of animal behavior and explain why it is important; explain the individual areas of study in animal behavior; cite the general effects of handling on livestock production; discuss how animal temperament and handling interact; describe the role of fear and fear memories in handling; list the benefits of training animals to be handled and to accept restraint; cite the effects of novelty, vision, noise, and shadows on livestock movement; discuss the concept of flight zone; identify the role of genetics in handling; and outline the basics of handling facility layout.

**Animal Health**
Students will explain the nature of disease; describe the causes of disease in general terms; outline a procedure for diagnosing disease; describe the body’s defenses against disease; describe the elements of herd health; identify the effects of animal disease on human well-being; and describe the elements of regulatory animal medicine.

**Market Coordination in Beef, Pork, and Poultry Industries**
Students will describe market coordination and vertical integration and explain their significance in the beef, pork, and poultry industries; explain how the biological production cycle, the genetic base, industry stages, geographic concentration, and operation size contribute to or limit vertical integration; list the motives and limitations to the industry for integrating an industry; explain the disadvantages to integrating an animal industry; and compare the probability of increased integration in the three major meat-producing industries.

**Beef Cattle**
Students will explain the place of beef cattle in the U.S. agricultural economy; understand the reasons the U.S. has a large beef industry and explain the purposes of beef cattle in the U.S. and abroad; give a brief history of the beef cattle industry in the U.S.; describe the structure and geographic location of the beef industry and discuss why the industry segments are located where they are; discuss the role of genetic selection in the beef industry and understand the impacts of the breeds revolution in the U.S.; describe feeding strategies of the U.S. beef cattle industry; understand the major health challenges to beef cattle management; explain the nutritional benefits of beef in the human diet; and discuss current trends and issues facing the beef production and their future impacts to the industry.

**Dairy Cattle**
Students will explain the place of dairy cattle in U.S. agriculture; explain the reasons for the size of the U.S. dairy industry; give a brief history of the dairy industry in the United States; describe the structure of the U.S. dairy industry; give an accurate accounting of where the dairy industry is located geographically in the U.S.; give a brief synopsis of DHIA and its functions; and identify and place
in context the role of genetics in the dairy industry.

**Poultry**
Students will explain the place of poultry in U.S. agriculture; describe the purpose and the value of the different poultry industry segments; give a brief history of the poultry industry in the United States; describe the poultry industry segments and structure; give an accurate accounting of where the poultry industry is located in the United States; quantify the role of genetics in the poultry industry; and explain the role of breeds in the U.S. poultry industry.

**Swine**
Students will explain the place of swine in U.S. agriculture; describe the purpose and the value of the swine industry in the United States; give a brief history of the swine industry in the United States; describe the swine industry segments and structure and explain how that structure is changing; give an accurate accounting of where the swine industry is located in the United States and explain how that location is changing; quantify the role of genetics in the swine industry; explain the role of breeds in the U.S. swine industry and discuss how that role is changing; describe the traits of the ideal market hog.

**Sheep and Goats**
Students will explain the place of sheep and goats in U.S. agriculture; explain the reasons for the size of the sheep and goat industries and describe how they are changing; give a brief history of the sheep and goat industries; describe the structure of the sheep and goat industries; give an accurate accounting of where the sheep and goat industries are located in the United States; identify the elements of a practical approach to breeding and genetics in the sheep and goat industries; and explain the significance of breeds in the U.S. sheep and goat industries and describe the general classifications of sheep and goat breeds.

**Horses**
Students will Put the horse industry in economic context; compare historical and current uses of the horse and understand the very unique features that make the horse industry different from all the rest of the commercial livestock industries; give a historical perspective on horses in North America and the United States; describe the change in the purpose of the horse in the developed world over the course of the 20th century; describe the structure and geographic location of the horse industry as far as available information will allow; explain the basics of horse genetics, especially color genetics; classify the types of horses; discuss the important tasks to be accomplished if a mare is to reproduce; cite the basics of how to feed a horse; identify and discuss areas of concern for the horse industry; and discuss some of the opportunities for growth in the horse industry.

**Aquaculture**
Students will Define aquaculture; describe the purpose of aquaculture and its worldwide importance; describe the place of aquaculture in agriculture and explain its role in feeding the world; describe the growth rate of aquaculture as an industry segment; name the species that make up the bulk of U.S. aquaculture;
discuss the various types of aquaculture systems; identify the general life cycles of aquatic species; compare the challenges of the geneticist who works with aquatic species with those faced by geneticists who work with the species previously studied; explain the nutritional benefits of aquatic products to humans; and discuss trends affecting aquaculture.

**Pets and Companion Animals**
Students will describe the place of the pet species in the lives of the people of the United States; discuss the types of pets that find service in the United States; give a historical perspective to the keeping of pets; discuss the geographic differences in pet ownership in the United States; compare the roles of breeds and breeding programs in pet and livestock species; describe the rudiments of reproductive management in the dog and cat; explain the nutritional information found on a container or bag of pet food; describe some common health challenges to pets; and cite the trends shaping the ownership of pets in the United States.

**Lamoids**
Students will describe the relationships among the six genera of the family Camelidae and list the major contributions each has made to society; describe the history of the llama in the United States; identify the physical differences among the genera and the unique characteristics they possess that make them a desirable and/or valuable animal; and describe the important health concerns of llamas and explain methods of maintaining good llama herd health.

**Rabbits**
Students will describe the place of rabbits in U.S. society and agriculture; explain the many uses for rabbits in the United States; give a brief history of the rabbit as a domestic animal; describe the rabbit industry segments; and explain the value of breeds in the rabbit industry.

**Careers and Career Preparation**
Students will describe the general job market in agriculture and animal science; identity the general areas of curriculum in animal science and the careers associated with each area; and develop a strategy for directing your education toward a satisfying career.

**Food Safety and Consumer Concerns**
Students will describe the complexities of the food safety issues facing the food industry; discuss the basics of the history of food safety during the 20th century; describe the magnitude of the problem of food safety to consumers; identify the most important of the foodborne pathogens; differentiate between the roles of various government agencies in providing for a safe food supply; describe the current and changing roles of FSIS in food safety; describe HACCP and state its purpose and principles; explain the level of safety associated with bovine somatotropin, growth-promoting hormones, and antibiotics in animal production; describe the value of food irradiation.
**Animal Welfare and Animal Rights**
Students will describe the basis for the general concern, but the lack of a consensus opinion, relating to animal welfare and animal rights; compare and contrast animal welfare issues and animal rights issues. If possible, reconcile whether animal rights and animal welfare are different or the same issue to you; cite the major pieces of legislation that have been passed in the United States regarding animal welfare and animal rights; describe the major philosophical differences among various groups that have an interest in this subject; and outline a view of the issues likely to be debated for legislative action.

**Animals in Sustainable Agriculture**
Students will define and describe sustainable agriculture; describe sustainable practices; explain the “systems philosophy” of sustainable agriculture; elaborate on the place of animals in sustainable systems; identify a monoculture system and contrast it to a diversified system; identify areas of concern for making livestock systems more sustainable; and explain the “lifestyle element” of sustainable agriculture.