

Swine production (4401)

Fall 2009

Course Listing/Description

ANSC 4401 - Swine Production

(4:3:2) Prerequisite: ANSC 3307, 3401, 3402 (majors only) or consent of instructor; may take only one of the above concurrently. Understanding pig biology, management of the pig's environment and genetics to maximize profits. Include genetics, nutrition, reproduction, housing, herd health, and management practices. Laboratory and field trips. F. (Writing Intensive)

Levels: Undergraduate - TTU

Schedule Types: Lecture, No Credit Lab

Instructor:

John J. McGlone, PhD

Professor

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TTU Pork Industry Institute web page: www.pii.ttu.edu

Swine Production class web page:

http://www.depts.ttu.edu/porkindustryinstitute/Swine%20Production%20class/animal_science_4401%20front%20page.htm

Staff at New Deal Swine research farm:

Stanley Harris, Manager, 746-5170

Eduardo Carrasco, 746-5170

Class and lab:

Lectures: Monday, Wednesday, and Friday - 9 until 9.50 (Rm: AFS 223; Distance Ed)

Lab: Tuesday – 12:30 until 2:20 (Texas Tech University Swine farm – New Deal or Meat Lab classroom)

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Class materials:

- Text book: 'Pig production: Biological principles and applications. 2003. by John McGlone and Wilson Pond. Available at the University book store.
- The PowerPoint slides and lab notes will be put online. If students miss a class or lab (without an excused absence) they will have to get the notes from a class mate. More is covered in class than is in the PowerPoint presentations.
- Students are required to purchase one pair of coveralls or other suitable clothing to be worn at the farm to be used for the duration of the semester.
- Students are required to purchase one pair of rubber boots to be worn at the farm to be used for the duration of the semester.
- **Students must not have been in contact with any other pigs/pig farm in the 72 hours prior to contact with the university pigs at New Deal.**
- **If students have fever, they should not come to class, nor should they be in contact with pigs.**

Learning Outcomes:

- √ To understand all aspects of pig production practices in the United States and in other countries.
- √ Demonstrate the ability to communicate clearly and concisely the different aspects of pig production discussed in class.
- √ Learning outcomes will be assessed through quizzes, written papers, exams, involvement in discussion, and participation in group projects.



University policies:

Attendance:

- √ Be on time for class (class starts at 9 am on Monday, Wednesday, and Fridays) and be on time at the farm. All students are to be at the New Deal farm by 12:30. The lab will start at 12:30 and attendance will be taken in labs.
- √ Please turn off cell phones and put them away.
- √ If you are going to be absent from a lecture – please tell the instructor ahead of time.

Legitimate Absences:

Written documentation for legitimate absences for missed exams must be provided **prior** to anticipated absences. Approval must be obtained ahead of time for an exam to be taken at a time other than the scheduled time. Illness or family emergencies must also have **written** documentation. Notify the instructor as soon as possible. In case of immediate, extreme emergencies notify the Dean of Students Office and your academic advisor and they will notify all of your instructors for you.

A student who intends to observe a religious holy day should make that intention known to the instructor prior to the absence. A student who is absent from classes for the observance of a religious holiday shall be allowed to take an examination scheduled for that day within a reasonable time after the absence. A student may not be penalized for the absence but the instructor may respond appropriately if the student fails to complete the assignment satisfactorily.

ADA Statement:

Any student who, because of a disability, may require special arrangements in order to meet course requirements should contact the instructor as soon as possible to make any necessary accommodations. Students should present appropriate verification from Student Disability Services (AccessTECH). No requirement exists that accommodations be made prior to completion of this approved university procedure. Classroom accommodations will be made for students with disabilities at the request of the student.

Scholastic Dishonesty:

It is the aim of the faculty of Texas Tech University to foster a spirit of complete honesty and high standards of integrity. The attempt of students to present as their own any work not honestly performed is regarded by the faculty and administration as a most serious offence and renders the offenders liable to serious consequences, possibly suspension. Scholastic dishonesty includes but is not limited to, cheating, plagiarism, collusion, falsifying academic records, misinterpreting facts, and any act designed to give unfair academic advantage to the student or the attempt to commit such an act. Further information can be found in the Student Handbook.

Assessment

Quizzes:

Ten quizzes will be given throughout the semester. Quizzes will consist of questions in any format.

Quizzes cover any material that has been covered in class or assignments or readings outside of class prior to that quiz; quizzes are comprehensive. Quizzes may all also contain information covered in lab and material presented by guest lecturers. Students that leave the class immediately after taking the quiz (before the end of the lecture) will get a 0 for that quiz. Quizzes will only be able to be made up by students with excused absences.

Class Etiquette

The instructor expects senior students to show simple etiquette in class. This includes, the following, at least:

- Be on time for class
- Remove any hats during class
- Wear shoes, shirts, pants or skirts that you would wear if you were on a job that included interacting with other professionals
- Do not read the paper or read on-line material while in class
- Do not check e-mail or web pages while in class
- Turn off your cell phone
- Do not eat in class. You may bring a drink if in a closed/covered cup
- Be polite and professional to other students and to guests
- Greet your fellow classmates and the instructor with a simple good morning or hello
- Be attentive in class; participate in discussions
- We are here to learn and we require a healthy, respectful positive environment

Violation of etiquette rules may result in loss of points or removal from class.

Attend Farrowing:

Each student must attend a sow-litter farrowing and assist with the birth of the litter. The farrowing schedule will be made available to the students. Students will be assigned a sow and given her estimated farrowing date. Students must check her delivery status and be present at birth of the litter.

The litter birth must be recorded in still and/or video. The sow should be aided where necessary. Students will document an aspect of the piglet birth process as one writing/video assignment.

Students will be responsible for the following activities about their sow and litter:

- Be present at birth
- Dry off each piglet, ear notch it, weigh it, record the weight and time of birth and pig sex, and place it near a teat to suckle
- At three (3) days of age, "process" the litter; this will include
 - Castrate the male piglets
 - Dock tails
 - Give supplemental iron injection (100 mg)

- Provide antibiotics or vaccinations as directed by the swine herdsman
- At exactly 21 days of age, weigh each piglet and the sow – this is weaning age, but the litters will be weaned a few days later according the farm schedule
- After weaning, breed the sow by AI with farm staff help
- Prepare a 1-page farrowing report, that includes the following information:
 - Sow pre-farrowing weight
 - Sow 21-day weaning weight
 - Sow weight change (growth or weight loss)
 - Time of each piglet birth and average interval between births
 - Sex of each piglet
 - Individual piglet birth weights, total litter birth weight and average piglet birth weight
 - Individual piglet 21-day weaning weights, total litter weaning weight, and average piglet 21-day weaning weight
 - Average piglet daily gain from birth to weaning
 - Causes of piglet mortality
 - Preweaning mortality %
 - Indicate any vaccinations or treatments that the sow or piglet's received
 - Short narrative on the birth process and the life of the litter, and general observations
 - Be sure to include a second sheet with your report that is the results of your Biosecurity audit
 - **The Farrowing Report and Biosecurity Audit form are due: November 2, 2009**

YouTube Project:

Swine Production class is a writing intensive class. This semester, teams of students will prepare four videos and upload them to YouTube. For these projects, students must follow these steps:

1. Students will assign:
 - a. a primary writer/author, secondary and tertiary authors; the written script must list the authors in order of contribution (the one that contributes most will be the first author listed)
 - b. team members (videographer, editor, actors, etc.)
2. Write the script
3. Have script approved as technically correct
4. Shot video
5. Edit video
6. Upload video

Each video will have the following features:

1. In one of four categories (see below)
2. 5 minutes or less in duration
3. Will contain more than one "scene" (ex., pigs, talking head, machines, interview, computer screens, animation, graphics, etc.)
4. Must contain key words TTU Swine Production 2009 and be up-loaded to the TTU Swine

Production 09 channel.

Categories of Video (each group will produce one from each category):

1. Society Issue
 - a. World hunger
 - b. Environmental issues
 - i. Air quality
 - ii. Water quality
 - iii. Soil health
 - c. Animal welfare
 - i. Gestation sow housing
 - ii. Lactation sow housing
 - iii. Castration
 - iv. Transportation
 - v. Space during finishing
 - vi. Tail docking
 - d. Food safety
 - e. Diet-health issues with pork
 - f. Worker health or safety
1. How-to; hands-on pig husbandry having to do with piglet birth or litter processing
2. Science-based educational topic in the areas of:
 - a. Nutrition
 - b. Genetics
 - c. Meats
 - d. Reproductive Physiology
 - e. Environmental management (air quality, ventilation, temperature)
 - f. Waste management
3. Open to anything creative, for example:
 - a. Swine Influenza
 - b. Farm economics
 - c. Pigs as a biomedical species for research
 - d. Xenotransplantation
 - e. Husbandry tasks other than litter processing (ex., handling pigs, loading trucks, routine pig health checks, etc.)

Helpful hints about the YouTube Assignment

- Sandy Gellner in the Department office (first floor of AFS) has a video camera you can check out.
- Free and simple video editing software is available free online. See Picasa from Google. You can upload to YouTube directly from Picasa.
- See the YouTube Handbook to gain video tips: http://www.youtube.com/t/yt_handbook_produce
- Our channel:
 - <http://www.youtube.com/user/jmcglone09>
 - Swine Production Fall 09
 - You will be provided with the password so you can upload your video (script must be edited and approved by the instructor before uploading)
 - Become a friend of our YouTube Channel
- You can get help in the Library & Ag Ed

Grading of YouTube Project

The grading of the YouTube project will be according to the following criteria:

%

50% Script (technical correctness, writing style, understandability, creativity)

10% Student peer-review of final product

10% Length (4-5 minutes target)

10% Depth of topic covered

10% Creativity and entertainment/educational impression

10% Number of views on YouTube

100%

Service Projects

Students may earn extra credit (up to 30 points) by participating in service activities (10 points per project) in the community related to feeding homeless and poor people. This service-learning approach should bring your expertise in food production, food safety and quality to less fortunate people. The instructor will give each student a list of volunteer opportunities at soup kitchens or food pantries in Lubbock. To be eligible for extra points, students must participate in food-related service, and provide a short (less than 5 minutes) oral report to the class and provide a very short written report that has your name, the service activity and a few sentences that describe the activity, along with your impressions of the situation.

Exams:

A mid-term oral exam and an optional final exam will be given. The mid-term and final exam will be oral exams. The mid-term exam will cover the class material from the first lecture until the lecture before the mid-term. The optional final will be comprehensive and include all lectures, DVDs and textbook information. The mid-term and final will include material from lectures, labs, DVDs, and guest lectures.

Grades:

Item	Points	%
Quizzes	200	40
YouTube writing	100	20
Mid-term oral exam	100	20
Attended farrowing & Farrowing Report	100	20
Total	500	100
Optional final exam	100	
Variable points +/-	Service, Etiquette, Participation, Attendance up to 200 points	

A = 90 -100 %

B = 80 -89.9 %

C = 70 -79.9%

D = 60 -69.9 %

Below 60 % = Fail

General Schedule for Fall, 2009

Faculty on Duty: August 24

Registration: August 25 – 26

First Class Day: August 27

Holidays: Sept. 7, Oct. 12 – 13

Nov. 25 – 27

Last Class Day: December 9

Final Exams: December 11 – 16

Commencement: December 18 – 19

2009 Fall farrowings:

Sept 1-2; Oct 1-2; Dec 10-11

Class schedule

(Schedule may change throughout the course of the semester)

Wk	Day	Date	Class and lab topic	Chapters	Comments
1	Fri	28-Aug	Intro to class; Current status of industry		
2	Mon	31-Aug	Biosecurity & continued introduction	NPB	DVD
	Tue	1-Sep	ACUC Training & Tour farm; Litter Processing		ND
	Wed	2-Sep	Pig domestication and early history	1, 2	
	Fri	4-Sep	USA pig industry benchmarks	NPB	DVD
3	Mon	7-Sep	Holiday; Labor Day		
	Tue	8-Sep	NPB & PQA+ Certification, Sherrie Niekamp, NPB		Q #1 Guest, ML
	Wed	9-Sep	Pig Anatomy & Physiology; Society Issues	3, 4	
	Fri	11-Sep	Society Issues		
4	Mon	14-Sep	Breeding & Gestation Mgt & Sow Housing Calculator	14, NPB	DVD
	Tue	15-Sep	Farrowing Management; Blood collection	NPB	DVD, ND
	Wed	16-Sep	Show pig panel discussion; Denny Belew, (http://www.belewfarms.com) Stanley Young, Past President of TXPPA (http://www.texaspork.org/) Todd Beyers (http://www.beyersfarms.com/contact.html)	7	Q #2
	Fri	18-Sep	Pig Biology – Blood sampling; anatomy	4	
5	Mon	21-Sep	Farrowing Management	18, NPB	DVD
	Tue	22-Sep	Field trip to show pig producer farm; Kyle Stephens from Canyon or Denny Bellew in Tahoka (12:30-5 pm)		Travel
	Wed	23-Sep	Pig Biology – Reproduction	5, 17	Q #3
	Fri	25-Sep	Breeding & Gestation Management	14, NPB	DVD
6	Mon	28-Sep	Records/PPSY		
	Tue	29-Sep	Breeding sows & boar collection		ND
	Wed	30-Sep	Nursery & Grow-finish management	15, 19	Q #4
	Fri	2-Oct	Nursery & Grow-finish management	NPB	DVD
7	Mon	5-Oct	Farrow litters; no in-class meeting		
	Tue	6-Oct	Farrow litters; no in-class meeting		
	Wed	7-Oct	Farrow litters; no in-class meeting		
	Fri	9-Oct	Farrow litters; no in-class meeting		
8	Mon	12-Oct	Fall break -- no class		
	Tue	13-Oct	Fall Break -- no class		

	Wed	14-Oct	Joe Wolfe from Cargill	6	Q#5
	Fri	16-Oct	Hogzilla; feral pigs		
9	Mon	19-Oct	Growth, Development and Survival	8	
	Tue	20-Oct	Seaboard Foods presentation		ML
	Wed	21-Oct	Creating a comfortable microenvironment	13	
	Fri	23-Oct	Ventilation & Management	NPB	DVD
10	Mon	26-Oct	Mid-term oral exam		
	Tue	27-Oct	Ventilation controls & Transportation		ND
	Wed	28-Oct	Waste management	16	Q #6
			Pig Husbandry & Stockmanship	NPB	DVD
	Fri	30-Oct	Effective handling of pigs		
			Managing the breeding herd	17	Q #7
11	Mon	2-Nov	<i>Farrowing Reports due</i>		
	Tue	3-Nov	Record keeping systems & Farrowing Reports Discussion	ML	ML
	Wed	4-Nov	Managing sows and piglets	18	
	Fri	6-Nov	Swine Caretaker	NPB	DVD
12	Mon	9-Nov	Managing sows and piglets		Q #8
	Tue	10-Nov	Swine nutrition laboratory & lecture		ND
	Wed	11-Nov	Management of growing pigs	19	
	Fri	13-Nov	Swine disease recognition & treatment	NPB	DVD
13	Mon	16-Nov	Swine Diseases Dr. T Brooks	20	Q #9
			Assessing pig health – walking the pens, sow body condition scores, lameness evaluation & Euthanasia		ND
	Tue	17-Nov			
	Wed	18-Nov	Swine Diseases Dr. T. Brooks		
	Fri	20-Nov	YouTube editing time	No class	
14	Mon	23-Nov	YouTube editing time	No class	
	Tue	24-Nov	Pork Production safety system	NPB	DVD
	Wed	25-Nov	Thanksgiving		
	Fri	27-Nov	Thanksgiving		
15	Mon	30-Nov	YouTube Presentations		Q#10
	Tue	1-Dec	Pig Necropsy @ Meat Lab		ML
	Wed	2-Dec	YouTube Presentations		
	Fri	4-Dec	YouTube Presentations		
16	Mon	7-Dec	Dr. Chance Brooks; Pork Quality	9	
	Tue	8-Dec	Pork Sensory lab		ML
	Wed	9-Dec	Last class -- review		
	Wed	14-Dec	7:30-10:00 am Optional Final Exam		AFS 223

Biosecurity Laboratory and Audit Development Project

Biosecurity is critical to commercial pork production. A biosecurity program keeps out diseases that may infect pigs or people. The biosecurity program also must work in concert with the worker health and safety program. People that work with pigs as their full time job must be careful to avoid contact with other pigs on other farms or in public venues (ex., fairs). In addition, we now know that people can catch zoonotic diseases that can infect the pigs (ex., SIV).

An audit is an objective tool to measure performance. In this case, students will develop a written audit instrument in EXCEL. The audit document must fit on one page and be legible. Use 12 point font or larger.

Include points for each item, and a total score of 100. Propose a % pass rate. Indicate if some audit points, if not met, are automatic failure.

To begin, view the NPB Biosecurity DVD. Take notes and capture the key components of a biosecurity on a farm. A blank form will be turned in with Quiz #1. The form will be graded, then students and the instructor will make adjustments as a group. When students farrow their sows, they will complete the biosecurity audit and turn it in with the farrowing report.

Keep in mind these factors in developing the biosecurity audit form:

- We want to protect the pigs from
 - Incoming pigs' diseases
 - Vermin (rodents, insects, birds)
- We want to protect the people from zoonotic diseases
- Sanitation and hygiene are important
- Building structures are important
- Standard operating procedures are important
- Quarantine and disease prevention are critical
- A herd health program is critical
- Knowing what diseases are present and what we do not have on the farm is important
- The form should be simple, clear, objective and 1 page

Blank Biosecurity Audit Form is to be handed in with Quiz #1

A completed Biosecurity Audit For is to be turned in with the Farrowing Report

Commonly Transmitted Porcine (Swine) Zoonoses

Disease	Causative Organism	Probable Means of Spread to Man	Prevention
Brucellosis	<i>Brucella spp.</i>	Swine body fluids; occupational exposure	Wear protective clothing and gloves when handling blood, tissue, urine, and aborted fetuses; avoid contact through cuts or breaks in the skin.
Campylobacteriosis	<i>Campylobacter spp.</i>	Occupational exposure; fecal contamination; mainly food and water borne	Use good hygiene practices, handwashing, sanitation; wear protective clothing (gloves) when handling infected animals
Erysipeloid	<i>Erysipelothrix Rhusiopathiae</i>	Occupational and recreational exposure	Prevent skin wounds; wear protective clothing (gloves) while handling infected animals; cleanse skin wounds promptly with soap and water
Leptospirosis	<i>Leptospira spp.</i>	Occupational and recreational exposure to urine; waterborne	Use protective equipment (gloves), avoid skin or mucus membrane contact with urine, or moist soil or vegetation that may be contaminated with animal urine
Salmonellosis	<i>Salmonella spp.</i>	Fecal contamination; occupational exposure	Good sanitation, along with good personal hygiene, avoiding stress, and using salmonella free feed, is very important; thoroughly wash hands after animal contact
Yersiniosis	<i>Yersinia spp.</i>	Ingestion; recreational exposure	Use good hygienic practices, especially handwashing