ANSC 415
BEEF CATTLE PRODUCTION AND MANAGEMENT
SPRING 2014

Instructor: Dr. Samantha (Sam) Cunningham, Assistant Professor
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Office Hours: M 2 to 3, T 9 to 12, or by appointment

Class Time:

Lecture:	M W F	11 to 11:50pm	in 305 Knoblauch Hall
Lab:	Th	10 to 11:50pm	in 305 Knoblauch Hall

Reference Text:

Beef Production and Management Decisions, 5th ed. T.G. Field. 2007. Prentice-Hall, Inc.

Additional Course Materials:

Any additional course materials may also be found online on Western Online: www.westernonline.wiu.edu

Prerequisite: ANSC 222/322 and ANSC 314 or approval of instructor.

It is not mandatory that students have completed all prerequisites before enrolling, but, extra reading/studying will probably be required for certain course components.

Course Description:

Major principles involved for profitable and sustainable, integrated beef cattle production from the perspective of the U.S. cow-calf sector.

Course Objective:

1. Understand the fundamental concepts associated with cow-calf production and how they interact
2. Identify, interpret and convey research that addresses a specific beef cattle production topic through a research paper
3. Communicate production recommendations for a specific scenario through an oral presentation and complementary written report as a group project

Attendance:

Attendance and participation are important components of this course and are crucial for learning. Attendance is expected and will be monitored at each lecture and lab meeting. Students having 2 or fewer unexcused absences will be eligible for a curve at the end of the semester. *Students having 6 or more unexcused absences will have their final course grade reduced by a letter grade at the end of the semester.*

Attendance continued:

If you anticipate an excused absence, please notify me in advance, prior to an exam, quiz, or homework due date, for example. Accepted excuses would include university related activities/ and personal health with a written excuse from a faculty advisor or a doctor's note. All other excuses will be handled at the discretion of the instructor. The student is responsible for any missed information and/or class material, as well as making arrangements for making up any missed work.

ADA Compliance:

In accordance with University policy and the Americans with Disabilities Act (ADA), accommodations in the area of test and note-taking may be made for any student who notifies the instructor of the need for accommodation. It is imperative that you take the initiative to bring such needs to my attention, as I am legally not permitted to inquire about the particular needs of students. Furthermore, I would like also to request that students who may require special assistance in emergency evacuations contact me as to the most appropriate procedures to follow in such an emergency.

Academic Dishonesty:

Any violation of the Academic Dishonesty Policy in Student Handbook (http://www.wiu.edu/provost/students/) will result in an automatic failure in the course. Plagiarism and cheating are areas of concern for the course. This course is designated to enhance your writing and presentation skills within your academic area, not the ability to copy thoughts and ideas. Plagiarism and cheating WILL NOT be tolerated.

Attention Education Majors:

The changes within the state certification requirements, which go into effect immediately for all of those students who graduate in the spring 2014 and after, you are required to receive a grade of a "C" or better in this course in order to meet these new requirements. With the new university +/- grading system, receiving a "C-" or below will require you to retake this course or find a substitute course to meet School of Agriculture graduation requirements.

Class conduct:

Asking of questions and discussion of relevant information in and outside class is highly encouraged; however, talking to neighbors, texting, sleeping, or studying for other courses during class time will not be tolerated. Come to class ready for discussions (you will be called upon).

NO CELL PHONES. If you have a cell phone that rings during class, you will automatically receive an unexcused absence for that class meeting. If you have an emergency situation where you need to have a cell phone on during class, let me know ahead of time. Cell phones, blackberries, iPhones, or other electronic communication devices with built-in calculators cannot be used for exams and will not be tolerated; only actual calculators will be allowed.

Course Grade:

3 Hour Exams	30%
Final exam	15%
Quizzes and homework	25%
Individual research paper	15%
Group ranch project	15%

Grading Scale:

90 to 100	A
87 to 89	B+
82 to 86	B
80 to 81	B-
77 to 79	C+
72 to 76	C
70 to 71	C-
67 to 69	D+
62 to 66	D
60 to 61	D-
$\leq$ 59	F

Homework and Quizzes:

You will be assigned approximately 6-8 homework assignments over the course of the semester. *Do not start or try to finish your homework a few minutes before class/lab time.*

Take home assignments are generally due one week from the date assigned unless otherwise specified. If they are turned in one to seven days after the due date, the student will receive an automatic 25 point discount. Assignments turned in over 7 days late WILL NOT be accepted, and the resulting grade will be "0". Students with excused absences will be allowed to make up homework assignments within these same guidelines with modified due dates.

Paper:

You will be required to write a research paper specific to the topic of beef cattle production and management. The paper will follow the general writing style of the Journal of Animal Science. Possible topics and the schedule and expectations associated with the outline, summary/draft, and final version **(due by 5pm Wednesday, March 26)** as well as an overview of how the papers will be graded will be provided as part of this syllabus.

Ranch Project:

You will be assigned to a group of 4 or 5 students to conduct an in-depth ranch plan for a specific production scenario. Your group will give a 15-minute presentation during lab on **April 23** that highlights your most important points. This presentation must be done in Microsoft Powerpoint™. A written report that describes the ranch project will be due on **April 16**. Details on the ranch project will be given during the second lab, and you will work on components of the project as well as activities in lab as a group throughout the semester. Participation by all members of your group is crucial for your success! You will confidentially evaluate all members of your group (and they will evaluate you). This peer evaluation will add or subtract up to 20 points from the instructor base grade for the project. **Unfavorable evaluations of you by your group may result in you receiving a grade of "F" for the project.** The peer evaluation form is attached.

Tentative Course Schedule (Lecture)

Jan 13	M	Introduction and structure of U.S. beef cattle industry
Jan 15	W	Structure of the U.S Beef Cattle Industry
Jan 17	F	Historical and current approaches to genetic improvement Genetic resources: breed and animal choices
Jan 20	**M**	**NO CLASS—Martin Luther King Day**
Jan 22	W	Genetic resources: breed and animal choices Fundamentals of crossbreeding
Jan 24	F	Crossbreeding programs: terminal crosses and systems
Jan 27	M	Crossbreeding programs: continuous systems
Jan 29	W	Combination crossbreeding systems and management considerations
Jan 31	F	Genotype by environment interactions
Feb 3	M	Current information available for selection of replacement animals
Feb 5	W	Non-traditional inheritance aspects such as imprinting, epigenetics, etc.
Feb 7	F	Calf and cow size considerations and implications for production traits
Feb 10	M	Animal identification and which records to keep
Feb 12	**W**	**NO CLASS Lincoln's Birthday**
Feb 14	**F**	**Exam I**
Feb 17	M	Controlled breeding and calving seasons
Feb 19	W	Body condition score and associated management considerations
Feb 21	F	Replacement heifer development management
Feb 24	M	General cow herd reproductive culling and longevity considerations
Feb 26	W	Reproductive health management for bulls and females
Feb 28	F	Bull reproduction and management
Mar 3	M	Bull reproduction and management
Mar 5	W	Fundamentals of health, vaccination and immunity
Mar 7	F	Growth and development of cattle
Mar 10-14		***SPRING BREAK***
Mar 17	M	Calf nutritional aspects-pre weaning and post weaning
Mar 19	W	Nutritional management of cow herd
Mar 21	F	Protein and energy supplementation
Mar 24	M	Grazing animal considerations
Mar 26	**W**	**EXAM II**
Mar 28	F	Pasture management/grazing systems
Mar 31	M	Grazing systems
Apr 2	W	Considerations to minimize feed expenses
Apr 4	F	Considerations to minimize feed expenses
Apr 7	M	Management of environmental resources
Apr 9	**W**	**EXAM III**
Apr 11	F	U.S. industry structure and marketing
Apr 14	M	Marketing alternatives and supply chain considerations for producers
Apr 16	W	Retained ownership and end-product considerations/Value-added
Apr 18	F	Profitability, business and management philosophy considerations
Apr 21	M	Production system comparisons and considerations
Apr 23	W	Societal issues affecting U.S. beef cattle operations and production
Apr 25	F	Global issues and perspectives
Apr 28	M	Threats and opportunities for the U.S. beef industry
Apr 30	W	TBA
May 2	F	TBA
May 7	**W**	**FINAL EXAM @ 10 AM**

Tentative Lab Schedule

Jan 16	Cattle biological types and breeds
Jan 23	Animal Handling and Farm Safety
Jan 30	Crossbreeding system comparisons
Feb 6	Beef cattle performance records
Feb 13	Breeding cattle evaluation and selection
Feb 20	Body condition scoring and cow culling decisions and reproductive management
Feb 27	Herd health
Mar 6	Bull Sale Prep
Mar 13	NO LAB—SPRING BREAK
Mar 20	Beef Cattle ID—tattoo/re-tag replacement heifers
Mar 27	Feed resources management; Pasture evaluation and stocking rate problems
Apr 3	Fed cattle evaluation and value determination
Apr 10	Marketing/production system coordination
Apr 16	Field Trip** Ranch project written report is due in lab
Apr 23	Ranch project presentations
Apr 30	TBA

***Field trip date is tentative*

<u>*INFORMATION PROVIDED IN THIS SYLLABUS IS SUBJECT TO CHANGE***</u>**

OTHER IMPORTANT DATES

Jan	14	Bull Test 84-day weights
Jan	21	Ultrasound at Bull Test
Feb	8	Bull Test Open House during WIU Ag Mech Show
Feb	14	Begin Calving WIU 1st Calf Heifers
Feb	20-23	Illinois Beef Expo, Springfield
Feb 24 through March 7		Bull Sale Prep
March 14		Bull Sale; 7 pm @ Livestock Center
March 17		Begin Calving WIU Mature Cows

ANSC 415
Guidelines for Research Papers (Spring)

There will be three stages in the development of your research paper: (1) an outline, (2) a draft stage with 2-3 pages of writing, and (3) the final version. The goal is to have the final version as a scientific, technically accurate, and up-to-date coverage of your selected topic that could serve as an information source for people who are searching for information on specific livestock reproduction related topics.

Schedule for Research Paper development:
(1) Topic approval by instructor on Wednesday, January 22
(2) Outline Due by lecture time on Monday, February 3
(3) Draft Due by 5pm on Friday, February 28
(4) Final Version Due by 5:00 PM on Wednesday, March 26

All 4 steps of development must be typed in 12 pt font and double spaced.

(1) Outline
The outline should be no more than two pages in length and should have your name and topic at the top of the first page. There are 3 specific components to the outline: (i) the first component will be a general guide as to how your paper will be laid out, showing the sub-topic areas and the flow of the paper; (ii) the second component will be a typed, double-spaced paragraph, approximately 100 to 150 words long describing what you know about the topic at that point, and (iii) the third component will be 3 to 5 references you have to this point as a Literature Cited section. The paragraph must be double-spaced, written in third-person, passive tense, and, the references must be presented in the *Journal of Animal Science* format as a Literature Cited section (example shown below). The points of the outline are to develop and practice organization of thoughts, writing style and format for the Literature Cited section. The outline grade counts as one homework grade.

Literature Cited
AFT. 2011. Farming on the edge report. American Farmland Trust. Available at: http://www.farmland.org/resources/fote/default.asp. Accessed Jan. 25, 2011.

McKenna, D. R., D. L. Roeber, P. K. Bates, T. B. Schmidt, D. S. Hale, D. B. Griffin, J. W. Savell, J. C. Brooks, J. B. Morgan, T. H. Montgomery, K. E. Belk, and G. C. Smith. 2002. National beef quality audit-2000: Survey of targeted cattle and carcass characteristics related to quality, quantity, and value of fed steers and heifers. J. Anim. Sci. 80:1212-1222.

NASS. 2010. Cattle Report (Released July 23, 2010). National Agricultural Statistics Service, USDA. Available at: http://usda.mannlib.cornell.edu/usda/current/Catt/Catt-07-23-2010.pdf . Accessed Nov. 7, 2010.

Riley, D. G., J. O. Sanders, R. E. Knutson, and D. K. Lunt. 2001. Comparison of F_1 *Bos indicus* x Hereford cows in central Texas: I. Reproductive, maternal, and size traits. J. Anim. Sci. 79:1431-1438.

The sources in the Literature Cited section need to be in alphabetical order by the last name of the first author.

The citation fields of the sources in the Literature Cited section follow the order of:
(1) author(s) of the paper, web page, etc., (2) year of publication, (3) the title of the paper, chapter, web page, report, etc., (4) the source journal, book, organization, etc., and (5) volume and page numbers if journal article (or URL and date accessed if web source, or, name of publishing company and city if a book).

Any journal article that is obtained through the internet is cited as a journal article, NOT as a web source.

Magazine articles, newspaper articles, information from internet blogs, and information from internet discussion groups cannot be used as references. Scientific journal articles are the preferred source, but any report or information from any governmental agency or university web site is fine. Industry group web pages may or may not be appropriate, depending upon the paper topic or information provided. Private web pages of ranches or individuals, etc. are usually not appropriate as sources, but, this also depends upon the topic and information.

(2) Draft
This must be comprised of 500 to 750 words (2 to 3 pages) of writing as it will appear in the final version. The purpose of this stage is to evaluate your writing style, interpretation and presentation of pertinent data, and use of citations. Citations are used in the text of the paper with the author and year format (i.e. Smith, 1999; Smith and Jones, 2007; Smith et al., 2009, etc.) as done in the *Journal of Animal Science* as opposed to MLA or some other format. This draft must include a minimum of 5 references. This is to be written in the same style as the final version (double-spaced, passive tense, third person, reporting actual values from references, use of citations in text, etc.). The draft grade counts as one homework grade. Examples of bad and good writing styles:

Bad:
You need to watch your cows to see how fat they are if you want them to drop calves.
Good:
Cow-calf producers should monitor body condition of their cows if they want to enhance reproductive performance.

Bad:
Angus have more marbling than Limousin. Limousin have better yield grades than Angus.
Good:
Wheeler et al. (2005) reported that Angus-sired steers had more marbling than Limousin-sired steers (584 vs. 504), but had less desirable yield grades (3.4 vs. 2.4).

Bad:
I believe that calves should be implanted because ……..
Good:
Many studies have shown that use of implants ……..

The WIU Writing Center has many resources for students online about academic writing at www.wiu.edu/uwc. It is very important to understand what plagiarism is, and how to avoid it. The main ways to avoid plagiarism are: (1) do not turn in the same or a very similar paper for more than one course (someone else's or your own), (2) paraphrase what your resources have said, don't ever copy, and (3) give credit to where you got information through use of citations. A useful resource about defining and avoiding plagiarism may be found at http://wpacouncil.org/files/WPAplagiarism.pdf

(3) Final Version
The actual paper (final version) will follow the general style and format of the *Journal of Animal Science* (which can be viewed at http://www.asas.org). The final version should be comprised of 1,250 to 1,500 words (about 4 to 5 pages of writing not counting cover page or Literature Cited section). The final version of the paper should include somewhere between 10 and 15 sources in your Literature Cited section, but exceptions may occur with specific topics. The paper layout will consist of the following sections:
1. Cover page (your name, paper title, date and "Student Research Summary ANSC 424 Western Illinois University") – this will be on a separate page.
2. **Introduction** (about 100 words) – why is this topic important, and what will you discuss.
3. **Literature Review** (summary of research findings, what were the actual results of the study and how do they fit with results from other studies; you can use sub-headings or not, this must contain only writing in paragraph style, i.e. no bulleted lists, no tables, figures, graphs, pictures, etc.)
4. **Summary** (about 100 words) – why was it important to discuss this topic, and what were the take-home main points, how should producers/consumers use this information, etc.
5. **Literature Cited** (single spaced within citations, double spaced between citations and in alphabetical order based on last names of first authors as shown on previous page)
The headings (2 through 5 above) should be boldfaced and centered (like "**Literature Cited**" is on the previous page). Your paper should be typed as a single Microsoft WORD file or converted to a single pdf file, be double-spaced (this is single-spaced), have one-inch margins, have a ragged right edge (i.e. not right-hand justified), use 12 point font (this is Calibri 12 pt), and emailed as an attachment to s-cunningham@wiu.edu along with a printed copy of the final version. The grade for the final version of the paper is worth 15% of the grade in the course. The review and grading instrument used for the final version is found on the following page.

ANSC 415 Research Paper Evaluation Sheet

Paper content (65 points) _____ points

Adequate coverage of topic:

Important questions/areas not included:

Importance of topic conveyed to reader:

Supporting data from sources:

Interpretation and presentation of data from sources:

Style and form, adherence to guidelines (35 points) _____ points

Writing style:

Use of citations:

Flow of paper:

Grammatical/typographical errors:

_____ Grade

ANSC 415

Potential Research Paper Topics

Cow-calf

1. Heterosis for beef cow reproduction and calf growth
2. Factors that affect calf survival to weaning
3. Breed differences for age of puberty
4. Comparison of fixed-time vs. observed estrus synchronization protocols
5. Genotype-environment interactions for beef cow productivity
6. Effects of cow size on maintenance cost
7. Beef breed differences for calf growth and/or weaning weight
8. Effects of early calf weaning on beef cow reproduction
9. Feeding of distiller's grains in developing bulls and heifers (or mature animals)
10. Factors affecting longevity of beef cows
11. Bovine Viral Diarrhea (BVD) considerations for beef cow herds
12. Impacts of temperament on beef cow productivity
13. Identification of factors that affect profitability for cow-calf producers
14. Retained ownership considerations for cow-calf producers
15. Factors that affect prices/value of culled cows and bulls
16. Grazing distribution/pasture utilization of beef cows
17. Incidence of beef carcass injection site lesions from calfhood vaccinations/injections
18. Factors affecting prices of U.S. feeder calves
19. Alternate calf selling strategies for cow-calf producers
20. Factors that impact mature cow size

Stocker/Feedlot

1. Comparison of distiller's grains vs. corn in feedlot finishing diets
2. Calf health related to cost of gain in stocker programs
3. Effects of stocking rate on calf performance
4. Management aspects and feedlot cattle behavior
5. Genetic aspects of feed intake
6. Supplement considerations for stocker calves
7. Comparisons of different forages for stocker operations
8. Nutritional management of early weaned beef calves
9. Comparison of internal parasite control products
10. Comparison of grain processing techniques on feedlot cattle performance
11. Rotational vs. continuous grazing systems for stocker calves
12. Impacts of respiratory disease on feedlot cattle performance
13. Does eating behavior/pattern of cattle impact their performance?
14. Use of chicken litter on pastures grazed by cattle
15. Identification of PI (persistently infected) BVDV cattle
16. Factors that impact prices of feeder calves
17. Use of ractopamine (Optiflexx) in cattle finishing systems
18. Use of ultrasound in feedlot cattle management/marketing
19. Impacts of corn prices on feedlot cost of gain and profitability
20. Use of zilpaterol in cattle finishing systems

End Product Considerations

1. Effects of implants on beef tenderness
2. Breed differences for marbling ability
3. Use of genetic tests/genetic markers for beef quality traits
4. Survey of carcass traits of U.S. beef cattle (National Beef Quality Audits)
5. Factors that affect consumers' decisions in purchases of beef
6. Impacts of cattle health on carcass traits
7. Effects of electrical stimulation on beef characteristics
8. Factors that affect external fat on beef carcasses
9. Fatty acids in beef as related to quality/palatability and/or consumer health
10. Relationship between marbling and tenderness in beef
11. Factors that affect shelf life of fresh beef
12. Breed differences for traits affecting red meat yield (ribeye area, fat thickness)
13. Use of EPDs for carcass traits
14. Evaluation of "organic" and/or "natural" beef programs vs. conventional programs
15. Grass-fed beef production considerations for U.S. producers
16. Relationship between fat thickness and marbling of beef carcasses
17. Survey of USDA certified beef programs
18. Fatty acid profiles of beef from cattle fed different feeds (or different types of beef cuts)
19. Comparison of beef grading programs in different countries
20. High beef prices – good or bad for industry?

General and/or Public Issues

1. Effects of grazing cattle on public lands
2. Issues of land fragmentation and its impacts on U.S. beef cattle industry
3. Effects of stress on beef cattle productivity
4. Role and potential of fetal programming to influence beef cattle production
5. Hormones in beef products
6. Production of methane by beef cattle
7. Environmental impacts of manure from cattle feedlots
8. Production and utilization of cloned and/or transgenic cattle
9. Considerations for red meat levels in human diets
10. Cattle vs. wildlife considerations for Texas ranches
11. Impacts of beef cattle industry on U.S. (or Texas) economy
12. Export markets for U.S. beef products
13. Influences of animal rights groups on U.S. beef production
14. Comparisons of beef production in USA versus other areas of world
15. Keeping Foot and Mouth Disease (FMD) out of the USA
16. Consumer surveys and/or perceptions about U.S. beef and/or beef production
17. Do cattle contribute to global warming?
18. U.S. downer cows at packing plants
19. Economic impacts of high fuel prices on U.S. beef production
20. Is tick fever a real threat to U.S. cattle industry?

Ranch Enterprise Group Project

As a group, you will develop a ranch management plan with a beginning scenario and certain fixed factors that will be provided. Your goal is to act as a consultant group and provide the owners of the ranch with recommendations. At the end of the semester you will turn in a written report (due April 17) and make a 15-minute presentation in lab (April 24) highlighting the main points in the report. Copies of reports from previous years will be provided.

The outline below should be followed to prepare the written report.

I. Introduction

- County and ranch location
- Starting scenario and owner profile
- Initial financial aspects (cash on hand, what is invested, etc.)

II. Topography

- Types of grasses (predominant species, improved vs. native, warm season vs. cool season, etc.)
- Soil type
- Historical annual rainfall
- Water table and sources
- Predominant mineral deficiencies and/or concerns for area

III. Improvements

- Fences that need repair (options in fence type and costs, time frame for completions, etc. if necessary)
- Types of materials used and costs
- Pasture improvements (improved forages, cost of grass seed and establishment, fertilizer, installing new cross fences, annual maintenance issues, etc.)
- Water improvements (wells drilled, pipeline put in, tanks/ponds built, etc. and associated costs and maintenance considerations)
- Facilities (working facilities, pens, pen layout, new cross fences, etc.)

IV. Production Systems

- Identify which production systems need to be and/or could be used (purebred/seedstock, commercial cow-calf, replacement heifers, stocker cattle, bull development, etc., and, which combination(s) might be most effective)
- Breed(s) and/or crossbred combination(s) – breed production advantages and disadvantages, regional adaptation, market acceptance, target market etc.
- Sire selection criteria (reasons for selection, EPDs emphasized, traits to evaluate, etc.)
- Calving and breeding season(s) considerations

V. Animal Health and Nutritional Considerations

- Mature cows
- Bulls
- Replacement heifers
- Calves pre-weaning and post-weaning
- Other cattle (i.e. stocker calves, animals destined for specialized marketing programs, etc.)

VI. Marketing Strategies

- What types of animals (calves, steers, heifers, cows) can be marketed in different ways
- Target market(s) to go after

VII. Financial Aspects

- Total annual operational budget
- Expenses and income projected on a per cow annual basis

VIII. Summary and Overall Recommendations

ANSC 415
Group Ranch Project Member Evaluation
Spring 2013

Group Members for Ranch Project: *Do not put your name on this form.*

On a scale of 0 to 10 (0 = extremely poor, 10 = superior) rank each member of your group, **including yourself**, for the following points:

Overall level of participation:

Contribution of ideas for project:

Ability to draw useful information from sources, references, etc.:

Willingness to work for success of your group:

INSTRUCTOR EVALUATION
ANSC 415
Group Ranch Projects
Spring 2013

Members for Ranch Project:

Organization:

Thoroughness:

Presentation Aspects:

General Comments:

_____ points out of 100