Syllabus for Forages and Livestock in Pasture Ecosystems PSS 5328-D01

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Office Hours: By arrangement. Usually available from MWF 1:00-5:00, TuTh all day.

Course Description:
Class time: MWF 9:00-9:50
PSS 5328 Forages and Livestock in Pasture Ecosystems (3:3:0) The production and use of forage plant species used for pasture, hay and silage in the U.S., with emphasis on introduced species in and around Texas. The agronomy and ecology of forage growth, development, production, nutritional quality, and grazing systems. Design of forage systems in relation to available resources and livestock production goals.

Course Goals and Expected Learning Outcomes:

The goals are to provide students with the scientific background that explains how to produce and manage forage crops and grazing systems that are economically profitable, meet goals for soils, plants and animals, and that are compatible with local natural resources. This course builds on material in Agronomic Plant Science (PSS 1321), Principles and Practices in Soils (PSS 2432), and complements material in Crop Physiology (PSS 3323) and Crop Water Management (PSS 4325).

Successful students will be able to do the following:

1. Explain how forage growth processes affect forage management and quality.
2. Describe techniques for forage cultivar selection, stand establishment, pasture renovation, fertilization and weed control.
3. Design the layout and management of forage and grazing systems for beef, dairy and horse production.
4. List the components of forage quality and how they affect animal productivity as determined by chemical composition, environment and management practices.
5. Describe techniques of hay and silage production and storage.
6. Critically analyze the scientific basis for recent innovations in forage management.

Textbook: The required text is Forages: An Introduction to Grassland Agriculture, Volume 1, 6th Edition. 2003. R.F Barnes, C.J. Nelson, M. Collins, K.J. Moore (eds.). Iowa State Press, Ames, IA

Other References:
Terminology: See Glossary at the back of the textbook.
Understanding Grass Growth: The Key to Profitable Livestock Production, available for free download at http://grassland.unl.edu/understanding-grass-growth. Linked on Blackboard.
Arkansas Grazing Manual will be made available for downloading.

Lecture Format:
Traditional lecture using PowerPoint slides. For Distance students, lecture videos showing slide presentations are shown on Blackboard. All class slides, syllabus, and other handouts will be available on Blackboard by class time. Slide handouts in pdf format will be made available on **Blackboard** previous to the lecture. Time will be spent in some periods demonstrating plant parts and doing problem-solving. We will make at least one field trip to the New Deal research farm for field demonstrations. The trip is not required, but if you are on or near campus, you are strongly

encouraged to attend. There will be some problem-solving exercises requiring a calculator.

Lecture schedule 2017

Session	Date	Test	Topic	Text reading
1	Jan 20		Introduction; Terminology	Chap. 1
2	Jan 23		Forage ecology in Texas	Chap. 1
3	Jan 25		Forage ecology in the US and World	Chap. 1
4	Jan 27	Quiz 1	How grasses grow	Chap. 2
5	Jan 30		How grasses grow	Chap. 2
6	Feb 1		How grasses grow	Chap. 2
7	Feb 3		How legumes grow	Chap. 3
8	Feb 6	Quiz 2	How legumes grow	Chap. 3
9	Feb 8		Nitrogen fixation and inoculation	Chap. 4 p. 85-87
10	Feb 10		Carbohydrate storage and use	Chap. 4 p. 87-95
11	Feb 13		Water use by forages	Chap. 5: 111,118-123
12	Feb 15		Water use by forages	Chap. 5: 111,118-123
13	Feb 17	Exam 1	Exam	
14	Feb 20		Nutrient cycling & soil	Chap. 12, Handout
15	Feb 22		Fertilizers	Chap. 12
16	Feb 24		Fertilizer calculations	Handout
17	Feb 27	Quiz 3	Soil sampling & fertilizer recommendations	Handout
18	Mar 1		Warm-season perennial grasses-bermudagrass	Chap. 7, 11
19	Mar 3		Warm-season perennial grasses-bermudagrass	Chap. 7, 11
20	Mar 6		Warm-season perennial grasses- WW-BDahl	Chap. 7, 11
21	Mar 8		Warm-season annual grasses	Chap. 7, 11
22	Mar 10	Exam 2	Exam	
	Mar 13-17		**SPRING BREAK**	
23	Mar 20		Cool-season annual grasses	Chap. 7, 11
24	Mar 22		Legume forages	Chap. 7, 11
25	Mar 24		Legume forages	Chap. 7, 11
26	Mar 27	Quiz 4	Forage quality: general	Chap. 16, 17:393-4
27	Mar 29		Forage quality: analysis	Chap. 16, 17:393-4
28	Mar 31		Forage quality: analysis	Chap. 16, 17:393-4
29	Apr 3		Animal disorders	Chap. 18
30	Apr 5		Animal disorders	Chap. 18
31	Apr 7		Animal disorders	Chap. 18
32	Apr 10	Exam 3	Exam	
33	Apr 12		Hay production	Chap. 19
34	Apr 14		Hay production	Chap. 19
	Apr 17	No class	No class	
35	Apr 19		Silage production	Chap. 19
36	Apr 21		Grazing concepts	Chap. 17:402; Ch. 20
37	Apr 24	Quiz 5	Grazing calculations, Pasture layout	Chap. 20
38	Apr 26		Grazing calculations, Pasture layout	Chap. 20
39	Apr 28		Forage systems for cow-calf	Chap. 20
40	May 1		Forage systems for cow-calf	Chap. 20
41	May 3		Forage systems for stockers	Chap. 20
42	May 5		Forage systems for dairy	Chap. 17:411-412
43	May 8		Forage systems for horses	Chap. 17:410-411
	May 12	Exam 4	Final Exam 7:30-10:00 Emphasis on latter half	

Assessment:
Hour exams and Final exam will be mainly essay, some calculations, and some multiple choice. There will be 5 quizzes. Each will consist of 20 points, and will mainly cover material since the last quiz or exam. There will be 3, 1-hour hour exams. The final exam will cover the entire semester with emphasis on last half. Students will also write a paper on a special topic to be assigned early in the semester.

	Points	%	Grading scale:					
Quizzes (5 x 20 pt.)	100	16.7	A+	None	A	100-92	A-	<92-89
Hour exams (3 x 100 pt)	300	50.0	B+	<89-86	B	<86-82	B-	<82-79
Final exam (hour)	100	16.7	C	<79-70	D	<70-60	F	<60
Graduate paper	100	16.7						
Total	600	100						

Internet resources – Class notes, syllabus, and some other handouts will be posted on Blackboard before class. My home page is http://www.pssc.ttu.edu/faculty_pages/cwest.php. For another web page to find links to support the lecture material, I suggest you browse through the following we web site: http://forages.oregonstate.edu/ This is the Forage Information System, a forage encyclopedia and rich source of information on forages. A good source of images of forages is the following: http://www.fao.org/ag/AGP/AGPC/doc/Gallery/pic.htm

General Information:
1. It is important that you do your own work during quizzes and exams in this class. Evidence of collaboration on answers will be given an 'F' with no make-up examination. See item 7 below. Students in this distance section (D01) of PSS 5328 are NOT required to take any of the quizzes or hour exams with a proctor, but you definitely must work alone on those. I will look for evidence in your writing of copying someone else's answers. Your exams will not be the same as the undergraduates taking 3321. You will be examined at a higher level of cognition.
2. You are welcome and encouraged to come and see me, call me, and contact me by e-mail if you need help or have questions or just want to discuss forages. Text me only if urgent, and include your name in the text. I will try to schedule a few times during the semester when we meet face to face as a group to discuss some of the deeper aspects of the forage topics. I realize that some of you who are off-campus can't attend, so I will put you on a speaker phone.
3. Inclement weather: Class will be canceled if the campus officially closes for inclement weather conditions. Text me if weather prevents your attendance when campus is not officially closed. For distance students taking this course online, weather should not prevent you from keeping up with the lecture schedule. Let me know if some calamity prevents you from keeping up.
4. Texas Tech University, Operating Policy and procedures 34.12, Grading Procedures: It is the aim of the faculty of Texas Tech University to foster a spirit of complete honesty and high standard of integrity. The attempts of students to present as their own any work not honestly performed (as outlined below) is regarded by the faculty and administration as a most serious offense and renders offenders liable to serious consequences, possibly suspension for the Texas Tech University. Dishonesty of any kind on examinations, quizzes, or written assignments, illegal possession of examinations, use of unauthorized notes during an examination or quiz, obtaining information during an examination from the examination paper or otherwise from another student, assisting others to cheat, alteration of grade records, illegal entry or unauthorized presence in an office, are all instances of cheating. The instructor in a course is responsible for initiating action in each case of dishonesty or plagiarism that occurs in that class. In cases of

convincing evidence or of admitted academic dishonesty or plagiarism, an instructor should take appropriate action as described below. Before taking such action, however, the instructor should attempt to discuss the matter with the student. In cases in which guilt is admitted by the student or determined by the instructor, after attempting to contact the student, the offending student may be given a failing grade in a course as a result of academic dishonesty or plagiarism, the instructor should report in writing to the instructor's department chairperson the facts of the case and the action to be taken against the student. The chairperson will provide a copy of the letter to the student, the student's dean, the Student Mediation Center, and the chairperson's dean. The Student Mediation Center shall retain a copy of this report in its discipline files. The student will have the right to appeal the receipt of a failing grade in a course through the established grade appeal procedure. The student may not appeal a failing grade given for a class assignment.

5. Any student who, because of a disability, may require special arrangements in order to meet the course requirements should contact the instructor as soon as possible to make any necessary arrangements. Students should present appropriate verification from Student Disability Services during the instructor's office hours. Please note instructors are not allowed to provide classroom accommodations to a student until appropriate verification from Student Disability Services has been provided. For additional information, you may contact the Student Disability Services office at 335 West Hall or 806-742-2405.

"The University is committed to the principle that in no aspect of its programs shall there be differences in the treatment of persons because of race, creed, national origin, age, sex, or disability, and that equal opportunity and access to facilities shall be available to all". If you require special accommodations in order to participate, please contact the instructor. Students should present appropriate verification from "AccessTECH" located in the Counseling Center. No requirement exists that accommodations be made prior to completion of this approved University process. The URL for AccessTECH is: http://www.accesstech.dsa.ttu.edu/default.asp