Title: Forage Crops

Instructor: D.M. Vietor, Professor

Prerequisite: Junior or Senior classification

Learning Outcomes:

By the end of the course, students will be expected to:

- Describe and evaluate forage and grassland systems in relation to purposes of crop and livestock production and environmental conservation and remediation.
- Collect and identify introduced forage grasses and legumes.
- Choose, evaluate, and justify, orally and in writing, one or more introduced grasses and/or legumes for a given purpose and environment.
- Comprehend and apply knowledge and principles of forage and grassland growth and management in real-world situations.
- Develop, evaluate, and justify plans, orally and in writing, for selecting, establishing, producing, and using introduced grasses and/or legumes for a specified purpose and environment.

Syllabus

Lecture:

- Requirements Points
  - Quizzes / Homework 100
  - Essay examinations 200
  - Decision-case exercises and assignments 100
  - Final examination 100
  - Plant collection 50
  - Economic analyses 50

Class participation and problem-based learning will be encouraged through questions and discussion about real-world situations during class sessions. Students will receive up to 50 bonus points for class participation.

Session       Topic

A. Forage and grassland systems for humid and sub-humid environments

1. Purposeful development of systems
   a. Cropping systems

2. Resource conservation and sustainability
   a. Soil
   b. Water
   c. Nutrients

3, 4. Cycling and recycling
   a. N, P, and K
5, 6  b. Livestock production
   1. Grazing
      a. Dairy
      b. Beef
      c. Sheep and goats
      d. Wildlife
7  c. Forage and feeding
8  d. Reclamation, waste disposal, and phytoremediation
9, 10 B. Environmental constraints and stresses
   1. Soil
      a. Physical properties
      b. Chemical properties
11  2. Climate
      a. Water
      b. Temperature
12  3. Biological
      a. Interference
      b. Insects and diseases
      c. Grazing
      d. Interactions
13  C. Plant growth and development
    1. Terminology
    2. Germination and emergence
14  Examination 1
15  3. Meristems
16  4. Growth and regrowth
17  5. Life Cycle
18  6. Management responses
    a. Grazing
    b. Cutting
19  Assignment #1 Decision Case
20  D. Selection of introduced and improved species
    1. Purpose?
    2. Performance criteria?
      a. Productivity
      b. Quality
      c. Persistence
      d. Management
      e. Conservation
21  3. Identification
22  a. Warm-season grasses
23  b. Cool-season grasses
24  c. Legumes
25  E. Management of introduced and improved species
26  Assignment #2 Decision Case
   1. Establishment
      a. Tillage
         1. Conventional
         2. Minimum and no-till
      2. Seeding and sprigging
Assignment #3 Decision Case
3. Mineral nutrition
   a. Fertilizer
      1. Timing
      2. Rate
      3. Method
   4. Hay versus grazing
   5. Manure and wastewater
   6. Urban waste
   7. Risk assessment
   8. Nutrient budgets

Examination 2
4. Weeds
   a. Biology and competition
   b. Cultural control
   c. Chemical control

Assignment #4 Decision Case
5. Forage Utilization
   a. Grazing
      1. Variable vs fixed stocking systems
      2. Continuous vs rotational systems
      3. Economic optimum stocking rate
   b. Harvest and storage
      1. Stock piling vs harvest

Final Examination

Textbooks:


Evaluation of Learning Outcomes:

Students’ recall and comprehension of knowledge and principles will be evaluated through four quizzes and through class discussion/participation. Students’ performance on two essay examinations, a final examination, and decision-case exercises will be used to evaluate their ability to apply, analyze, and evaluate recommendations for species selection and management principles and practices. Students’ collection, mounting, and labeling of a plant collection will be used to evaluate students’ ability to identify common introduced forage species.

Electronic resources on Blackboard:

- PDF files of lecture presentations;
• Postings of course requirements, reading and homework assignments, and exhibits and resource materials for decision case and semester project;
• Posting of quiz and examination answers and grades;
• Links to resource materials at TAMU and other web sites.

Students with disabilities:

Americans with Disabilities Act (ADA) Policy Statement
The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be granted a learning environment that provides for reasonable accommodation of their disability. If you believe you have a disability requiring an accommodation, please contact the Department of Student Life, Services for Students with Disabilities, in Room B118 Cain Hall or call 845-1637.

Student honor code:

“An Aggie does not lie, cheat, or steal or tolerate those who do”

Upon accepting admission to Texas A&M University, a student immediately Assumes a commitment to uphold the Honor Code, to accept responsibility for learning, and to follow the philosophy and rules of the Honor System. Students will be expected to fulfill their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the TAMU community from the requirements or the process of the Honor System.