**ANS 3205 BEEF PRODUCTION AND RANGE MANGEMENT**

**1. COURSE OUTLINE**

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**Course Type:** CORE (B.Sc. Agric. (Animal option) and B.Sc. LUM)

**Course Credits (CU)**: 3 CU i.e. 45 Contact Hours per semester

**Course Duration**: 15 weeks (45 hours) i.e. 30 LH, 30 PH

**COURSE DESCRIPTION**

Principles and practices of beef cattle management; routine management of beef cattle, effects of environment on productivity of beef cattle, Applied Beef cattle nutrition; principal nutrition requirements of different classes of beef cattle, voluntary intake and factors controlling it, grazing management of beef cattle with emphasis on grass/legume swards, feedlot feeding systems, agro-forestry systems specific for rangelands/pastoral systems, Breeding control; implanting, pasture breeding, bull selection, pedigree bulls, Beef cattle animal health management and welfare; guidelines in control of animal diseases, role of quarantine, disease free zones, zoonotic diseases and diseases of economic importance Beef industry in Uganda; cattle population dynamics in Uganda and Herd compositions, meat production and off-take, breed descriptions and distribution, production systems with emphasis on commercial systems, factors affecting beef quantity and quality production Beef cattle ranch enterprise economics; capital investments; variable costs, revenue, profitability analysis Rangeland environment management, rangeland vegetation dynamics, ecology of rangelands in relation to livestock-plant-environment interactions; rangeland degradation: remedies to restore/improve deteriorating rangelands, Livestock management in rangelands; Water management and conservation in the rangelands/ranches, Soil management and conservation in rangelands; Causes of soil degradation in rangelands, soil legislation aimed at soil management and conservation, limitations that affect land use and soil management, soil management practices and conservation measures, Rangeland resource inventory and monitoring

**2. COURSE OBJECTIVES**

The general objective of this course is to enable students gain knowledge and skills in management and production of beef animals in a rangeland environment in a sustainable and environmentally friendly manner.

The **specific objectives** are to:

1. Introduce students to the basic principles and concepts of beef cattle and rangeland management
2. Provide students with skills in rangeland management and sustainable production of beef animals
3. To provide students with skills for monitoring and evaluation of the condition of rangelands and designing appropriate measures for restoring degraded rangelands
4. To enhance students understanding of beef production techniques, breed selection and breeding programs suitable under rangeland conditions

**4. EXPECTED OUTCOMES**

Upon completing this course students will:

1. Have a better appreciation of the importance and value of beef production in the economy of the world
2. Be able to critique different beef production systems and recommend suitable ones depending on locality and resources.
3. Be able to plan, manage and advise on rangeland restoration techniques in order to improve the productivity of the system
4. Be able undertake routine management practices of beef production in rangeland environment

**4. RECOMMENDED REFERENCES FOR READING**

1. Chesworth, J., 1992. Ruminant Nutrition. The Tropical Agriculturalist. CTA Macmillan
2. Battaglia, R.A., 2000. Handbook of Livestock Management. 3rd Edition. Prentice Hall, New Jersey
3. Battaglia, R.A., 2007. Handbook of Livestock Management. 4rd Edition. Pearson-Prentice Hall, New Jersey
4. Hohnholz, J.H., 1983. Applied Geography and development. A biannual collection of recent German contributions. Vol 21. Institute for Scientific Co-operation, Tubigen
5. Jean Pagot, 1993. Animal Production in the tropics and subtropics. CTA, Macmillan.
6. Preston, T.R. and Willis, M.B., 1982. Intensive beef production, 2nd Edition. Pergamon Press
7. Angus Cameron, 1992. Survey Toolbox for livestock diseases. A practical Manual and software package for active surveillance in Developingcountries.AustralianCenter for International Agricultural Research. ISBN 186320234X.
8. Behnke R. H., and ScoonesI. (1992): Rethinking range ecology: implications for range

management in Africa

1. Briske, D.D, S.D. Fuhlendorf and F.E. Smeins. 2003. Vegetation dynamics on rangelands: a critique of the current paradigms. Journal of Applied Ecology 40:601-614.
2. Brown, J.K., and J. Kapler Smith, eds. 2000. Wildland fire in ecosystems: effects of fire on flora. Gen. Tech. Rep. RMRS-GTR-42-vol 2. Ogden, UT: US Department of AgricultureForest Service, Rocky Mountain Research Station. 250 p. [Read Chap 1 (pp 1-8), Chap 2 (pp 9-34), Chap 9 (pp 185-195)]

**5. COURSE CONTENT**

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| TOPIC | CONTENT | METHOD OF INSTRUCTION / Time allocated | TOOLS / EQUIPMENT NEEDED |
| 1. Principles and practices of beef cattle management | * Routine management of beef cattle (identification, calf care, milking, breeding control, body condition scoring, etc)
* Effects of environment on productivity of beef cattle (Temperature, parasites and diseases, fluctuations in the quality and quantity of feed)
 | Interactive lecture (2 hrs) | Chalk / BB or Markers / Flip charts |
| 2. Applied Beef cattle nutrition | * Principal nutrition requirements of different classes of beef cattle
* Voluntary intake and factors controlling it
* Grazing management of beef cattle with emphasis on grass/legume swards
* Feedlot feeding systems
* Agro-forestry systems specific for rangelands / pastoral systems
 | Interactive lecture (2 hrs) | Chalk / BB or Markers / Flip charts |
| 3. Breeding control | * Implanting
* Pasture breeding
* Bull selection
* Pedigree bulls
 | Interactive lecture (2hrs)Practical (3 hrs) | Chalk / BB or Markers / Flip charts |
| 4. Beef cattle animal health management and welfare | * Guidelines in control of animal diseases
* Role of quarantine
* Disease free zones
* Zoonotic diseases and diseases of economic importance
 | Interactive lecture (2hrs) | Chalk / BB or Markers / Flip chartsTransport |
| 5. Beef industry in Uganda | * Cattle population dynamics in Uganda and Herd compositions, meat production and off-take
* Breed descriptions and distribution
* Production systems with emphasis on commercial systems (ranching & feedlots)
* Factors affecting beef quantity and quality production
 | Interactive lecture (2hrs) | Chalk / BB or Markers / Flip charts |
| 6. Beef cattle ranch enterprise economics | * Capital investments
* Variable costs
* Revenue
* Profitability analysis
 | Interactive lecture (2hrs) | Chalk / BB or Markers / Flip charts |
| 7. Rangeland environment management | * Definition and characteristics of rangelands,
* Climate and soils
* Range forages management
 | Interactive lecture (2 hrs) | Chalk / BB or Markers / Flip charts |
| 8. Rangeland vegetation dynamics | * Practical importance of vegetation dynamics,
* Processes of vegetation dynamics (Fluctuation, succession, retrogression)
* Range Condition and Trend
* Effects of grazing animals on range plants (stocking rates and carrying capacity)
* Range condition assessment
 | Interactive lecture (2 hrs)Field trip (6 hrs)Practical (3 hrs) | Chalk / BB or Markers / Flip charts |
| 9. Ecology of rangelands in relation to livestock-plant-environment interactions | * Rangeland degradation: remedies to restore/improve deteriorating rangelands
* Rangeland improvement through fodder banks and multipurpose trees (agro-forestry in the rangelands:
* Importance of fire in rangeland resource management
 | Interactive lecture (2 hrs) | Chalk / BB or Markers / Flip charts |
| 10. Livestock management in rangelands | * Livestock production systems in rangelands (Pastoralism, Nomadism, Ranching)
* Major constraints to the development of pastoral areas
* Development of pastoral areas in Uganda (Livestock restocking, Genetic improvement, Animal health – Control of tsetse fly vector and trypanosomosis, control of ticks, tick bone and parasite diseases, control of economically important epidemic and zoonotic diseases)
* Livestock / crop and environment interactions
 | Interactive lecture (3 hrs) | Chalk / BB or Markers / Flip charts |
| 11. Water management and conservation in the rangelands/ranches | * Water management issues
* Uses of water on ranches
* Sources of water on ranches
* Water Conservation
* Water measurement techniques
* Legal aspects and environmental issues
 | Interactive lecture (2 hrs)Practical (3 hrs) | Chalk / BB or Markers / Flip charts |
| 12. Soil management and conservation in rangelands | * Causes of soil degradation in rangelands
* Soil legislation aimed at soil management and conservation
* Limitations that affect land use and soil management
* Soil management practices and conservation measures
1. Soil surface management
2. Improvement of the natural grasslands
3. Fire
4. Land drainage
* Sylvipastoral practices
 | Interactive lecture (3 hrs)Practical (3 hrs)Field trip (9 hrs) | Chalk / BB or Markers / Flip charts |
| 13. Rangeland resource inventory and monitoring | * Rangeland manager’s information needs
* Determining the existing situation of rangeland vegetation resources
* Range trend monitoring
* Remote sensing
* Geographic Information Systems (GIS) Databases
 | Interactive lecture (2 hrs)Practical (3 hrs) | Chalk / BB or Markers / Flip charts |
| 14. Gender and range management | * Gender roles and issues in range management and their application in the development of rangelands
 | Interactive lecture (2 hrs) | Chalk / BB or Markers / Flip charts |

**6. SUMMARY OF TIME NEEDED**

Interactive lectures covering theory 30 hrs

On-station field practicals, 15 hrs

Field visits 15 hrs

**7. OVERALL COURSE EVALUATION**

Continuous Assessment Examination 20%

Field trips, assignments and practicals 20%

Final examination 60%