

ANS 3105 ANIMAL SCIENCE FOR AGRICULTURAL ENGINEERS

Course Type: Core (BSc. Agricultural Engineering)

1. Course description:
2. Course Credits (CU): 3 CU i.e. 45 Contact hours per semester
3. Course Duration: 15 weeks

1. Course Description

Importance of animals to man. Relevance of Animal Science to the field of Agricultural Engineering. Classes of domestic animals according to anatomy of digestive system. Basic principles of animal production. Physical and physiological mechanisms of adaptation. Effects of environment on farm animals. Optimum requirements for animal housing and handling structures Practice and equipment design. Animal husbandry operations. Livestock and poultry handling and transportation. Feeds for animals, feed requirements. Feed mixing and fodder conservation techniques. Breeding of domestic animals. Management of work animals.

2. Course Objectives

The overall objective is to enable the students to acquire the basic knowledge of the objectives of animal production, the principles and practices involved and their implications in relation to enhanced animal performance.

The specific objectives are to:

1. gain an overview of the importance of animals and constraints to improved production.
2. gain practical understanding of the principles of husbandry used in the production and contribution of engineering to improved production.
3. Students should understand the how fundamental principles gained from nutrition and introduction to animal agriculture are applied to improve production of animals.
4. through farm visits gain practical understanding of the production structures used in the production of animals.

3. References

1. Richard Battaglia. 2001. Handbook of Livestock Management. Prentice Hall Inc, New JerseyUSA.
2. Williamson and Payne: Animal production in the Tropics
3. CTA: Animal Production
4. Herren R. 2000. The science of Animal Agriculture.

4. COURSE CONTENT, METHODS OF INSTRUCTION, TOOLS AND EQUIPMENT REQUIRED

TOPIC	CONTENT	METHOD OF INSTRUCTION / Time allocated	TOOLS / EQUIPMENT NEEDED
1. Introduction to Animal Science	<ul style="list-style-type: none">• Definition of Animal agriculture• Importance of animals to humans• Constraints to improved animal production in Uganda• Relevance of animal science to Engineering	Interactive Lecture (4 hrs)	LCD Projector and Screen, BB/Chalk,
2. Basic principles of animal production	<ul style="list-style-type: none">• Housing• Feeding	Lecture (2hrs)	LCD Projector and Screen, BB/Chalk
3. Principles contd.	<ul style="list-style-type: none">• Disease control• Selection	Lecture 2 hrs Field visit (3 hrs)	
4. Principles contd.	<ul style="list-style-type: none">• Record keeping	Lecture 2 hrs	

	<ul style="list-style-type: none"> Care of young animals 		
5. Energy metabolism	<ul style="list-style-type: none"> Partition of energy in animals Importance of environment in energy partition Concept of maintenance and production 	Lecture (2 hrs)	LCD Projector and Screen, BB/Chalk
6. Thermoregulation	<ul style="list-style-type: none"> Mechanisms of heat transfer Thermoneutrality and critical temperatures Effectiveness of heat transfer 	Lecture (2 hrs)	LCD Projector and Screen, BB/Chalk
7. Principles of animal housing	<ul style="list-style-type: none"> Objectives of housing animals Types of animal housing Stresses in animal buildings Mechanical functions of buildings 	Lecture (2 hrs) Field visit 3 hrs)	LCD Projector and Screen, BB/Chalk.
8. The microenvironment in animal houses	<ul style="list-style-type: none"> Improving the micro-climate in house Building design for tropical environments Shade construction 	Lecture (2 hrs)	LCD Projector and Screen, BB/Chalk,
9. Feed mill operations	<ul style="list-style-type: none"> Basic components of a feed mill Importance of feed formulation Maintenance of quality in a feed mill 	Lecture (2 hrs)	LCD Projector and Screen, BB/Chalk
10. Artificial insemination	<ul style="list-style-type: none"> Definition Importance of AI Prerequisites for a successful AI programme Limitations to AI in Uganda 	Lecture (2 hrs)	LCD Projector and Screen, BB/Chalk
11. Basic structures used in animal production	<ul style="list-style-type: none"> The dip: design and maintenance The spray race: design and maintenance 	Lecture (2 hrs)	LCD Projector and Screen, BB/Chalk
12. Basic structures in animal production	<ul style="list-style-type: none"> The crush: construction, use and maintenance 	Lecture (2 hrs)	LCD Projector and Screen, BB/Chalk
13. Equipment used in animal production	<ul style="list-style-type: none"> Feed and water troughs Deworming gun and syringe Dehorning iron 	Lecture (2 hrs)	LCD Projector and Screen, BB/Chalk
14. Work animals	<ul style="list-style-type: none"> Factors determining effectiveness of work animals Husbandry of work animals Why ox-plough cultivation is not widely practiced in Uganda 	Lecture (2 hrs) Field based Practical on uniformity test (6 hrs)	Buckets, Plastic cups, Tape measure, Transport (30 seater)
15. Processing animal products	<ul style="list-style-type: none"> Handling and processing of hides and skins Handling and on-farm milk processing 	Lecture (2 hrs)	LCD Projector and Screen,

	<ul style="list-style-type: none"> Production of quality eggs and handling of eggs 	Design exercise (seminar) (6 hrs)	BB/Chalk Flip charts, Markers, Graphs
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5. SUMMARY OF TIME NEEDED

Interactive lectures covering theory	30 hrs
Class and station-based practical	10 hrs
Field visits	05 hrs

6. OVERALL COURSE EVALUATION

Continuous Assessment Test	20%
<ul style="list-style-type: none"> At least 2 tests (first after lecture 8 and second after lecture 12) Marked out of 20 each 	
Continuous Assessment (Assignments, practical, Field work)	20%
<ul style="list-style-type: none"> At least 1 assignment Marked out of 20 each 	
Final examination	60%

