**ANS 3102 DAIRY PRODUCTION SYSTEMS**

Instructors Dr Denis Mpairwe (PhD)

Dr Justine Nambi-Kasozi (PhD)

**Course Type**: **CORE (B.Sc. Agric. III, B.Sc. FST III)**

**1. COURSE DESCRIPTION**

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

**Course Duration**: 15 weeks with 30 LH (= 30 contact hours) + 30 PH (= 15 contact hours)

**COURSE DESCRIPTION**

Introduction: importance, trends and prospects, limitations and production systems; Establishing a dairy herd; Routine management practices; Management of young and replacement stock; Reproductive management in a dairy herd; Feeding the dairy herd; Milk secretion, milking and milk quality; Dairy cattle health management; Orientation to and practical hands-on of body condition scoring, judging cattle for dairy form, drawing a breeding chart using a universal calendar; making feed budgets for a dairy herd

**2. COURSE OBJECTIVES**

This course builds on and transforms the scientific knowledge that is previously gained from the basic courses in animal management, nutrition, physiology, biochemistry, genetics, economics and animal health into practical skills required for the management milk production and handling. It is intended for students to:

1. gain a better understanding of the Uganda’s and the global dairy industry while appreciating the importance of producing high dairy product and by-products.
2. gain technical knowledge and production skills of sustainable and contemporary dairy farming by developing competencies concerning the establishing, selection and evaluating, breeding, nutrition, health, housing, feeding of dairy animals, and marketing, all of which are reinforced with real-life applications through practical hands-on, pictorials and audio-video presentations.
3. have the opportunity to engage in active and critical dialog, and discussion while working in teams to develop problem-solving skills in applying scientific and technological knowledge that may contribute to the sustainable production within the scope of food, business entrepreneurship and natural resource management.

**3. RECOMMENDED REFERENCES FOR READING**

1. MILK PRODUCTION IN THE TROPICS – A. Chamberlain
2. DAIRYING: The tropical agriculturalist – R.W. Matthewman
3. MILK PRODUCTION: Science & practice – J.D. Leaver
4. UNDERSTANDING THE DAIRY COW: John Webster
5. LECTURE NOTES IN DAIRY PRODUCTION: C.D. Waiswa
6. DAIRY CATTLE JUDGING TECHNIQUES – G.W. Trimberger, W.M. Etgen, and D.M. Galton
7. A GUIDE TO CONDITION SCORING OF ZEBU CATTLE - M.J. Nicholson and M. H. Butterworth, ILCA ([www.fao.org/Wairdocs/ILRI/x5496E/x5496e03.htm](http://www.fao.org/Wairdocs/ILRI/x5496E/x5496e03.htm))
8. TROPICAL DAIRY FARMING : Feeding Management for Small Holder Dairy Farmers in the Humid Tropics- J. Moran
9. MILKING AND MILK PRODUCTION OF DAIRY SHEEP AND GOATS – F. Barillet
10. BUFFALO MILK PRODUCTION - Mikaela Ståhl Högberg and Ole Lind (<http://www.milkproduction.com>)

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

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| MODULE | CONTENT | METHOD OF INSTRUCTION / Time allocated | TOOLS / EQUIPMENT NEEDED |
| **1:INTRODUCTION** | * + Importance of dairy production   + Status of the dairy industry in Uganda   + Limitations to dairy production   + Dairy production systems   + Marketing of dairy products | * + Interactive lectures (4 hr),   + Practical session & participatory discussions (3hr)   (Pictorial session showing different production systems with associated infrastructure, exotic and indigenous breeds used for milk production) | * + Chalk & board   + Overhead projector/ transparencies   + LCD projector/ CPU |
| **2: ESTABLISHMENT OF A DAIRY HERD** | * Planning phase (feasibility/SWOT analysis, site selection) * Selection of foundation stock (criteria for selection of breed and individual animals within the breed(s) * Operationalisation of a dairy establishment | * Interactive lectures (4hr) * Practical (3 hr) | * + Chalk & board   + Overhead projector/ transparencies   + LCD projector/ CPU |
| **3: ROUTINE MANAGEMENT**  **(Recap of ANS 2201 with emphasis to dairy production)** | * Hygiene, animal care & handling   + Record keeping   + Parasite control   + Reading assignment & group presentations | * + Interactive lectures (2 hr)   + Practical (3 hr) | * Chalk & board * Overhead projector/ transparencies |
| **4:** **YOUNG STOCK MANAGEMENT** | * + Goals of young stock management & important considerations in care of calves   + Preparation for and management at calving   + Housing and feeding dairy calves   + Management of weaners to first breeding | * + Interactive lectures (3 hrs) | * Chalk & board * Overhead projector/ transparencies |
| **5:** **REPRODUCTIVE MANAGEMENT IN A DAIRY HERD** | * Methods of breeding * Breeding efficiency (performance indices, influencing factors) * Breeding records and use of the universal calendar   + Practical breeding tips | * + Interactive lectures (4hrs)   + Practical (3 hr) | * Chalk & board * Overhead projector/ transparencies |
| **6: FEEDING THE DAIRY HERD** | * Available feedstuffs for dairy cows * Phase feeding of dairy cows * Feeding techniques for top cows * Use of concentrates for the milking herd * Management of dry cows | * Interactive lectures (4½ hr) | * Chalk & board * Overhead projector/ transparencies |
| **7:** **MILKING & MILK QUALITY** | * The mammary gland growth & development * Milk letdown & milking practices * Pictorial/video session of milking and milking facilities * Factors affecting milk yield & composition | * + Interactive lectures (3½ hr)   + Pictorial/video & participatory discussions (3 hr) | * + Chalk & board   + Overhead projector/ transparencies   + LCD projector/ CPU   + Audio/video facility |
| **8: DAIRY CATTLE HEALTH MANAGEMENT** | * General principles of disease prevention & control measures in a dairy herd * Outline of major dairy cattle health problems (Details covered under ANS 2201 & ANS 3202) | * + Interactive lectures (2 hr) | * + Chalk & board   + Overhead projector/ transparencies |
| **9: PRACTICAL BASED MODULE**  Spread over week 4 – week 11 with 5 groups of ≈ 25 students each x 3 hr | * Body condition scoring * Judging cattle for dairy form and linear descriptive traits for conformation * Maintaining breeding records using the universal calendar * Developing a simple dairy feeds budget | * + Interactive lectures (3 hr)   + Practical (15 hr) | * + Chalk & board   + Overhead projector/ transparencies   + Dairy animals   + Metre rules |

**5. SUMMARY OF TIME NEEDED (total 45 contact hours)**

Interactive lectures covering theory 30 LH (30 contact hours)

On-farm practicals; classroom pictorials & videos; 1 field visit, 30 PH (15 contact hours)

**6. OVERALL COURSE EVALUATION**

Continuous assessment & mid-semester examination 20%

Practical reports, field trip report and take-home assignment 20%

Final written examination 60%