

## Certificate in Dairy Science

### 1. Objectives

The programme of study aims at providing practically-oriented training in dairy science and production. The objective of the programme is to provide professional training to staff working in the dairy enterprises, medium and small scale producers, extension assistants and school-leavers who aspire to set up viable dairy farms. The programme aims to equip them with a broad spectrum of scientific, technical and managerial skills needed to meet these new challenges facing the Mauritian dairy sector.

After completing the Programme of Studies, the students should acquire and demonstrate:

- An understanding of the biological and economic principles of dairy science.
- An ability to apply the principles of dairy science to assure the quality and safety of milk produced.
- Knowledge and competence in the organisation and management of a dairy farm for profit.

A wide range of teaching methods are used, ranging from formal lectures to tutorials, seminars, laboratory practicals, visits.

### 2. General Entry Requirements

As per General Entry Requirements for Admission to the University for Certificates.

### 3. Programme Requirements

School Certificate.

### 4. Programme Duration

	Normal (Years)	Maximum (Years)
Certificate (Part-Time)	2	3

5. Credits per year: Minimum 12 credits; Maximum 18 credits, subject to Regulation 4.

6. Minimum Credits Required for Award of Certificate: 30

Breakdown as follows:

	Credits from	
	Core Taught Modules	Mini Project
Certificate 2 years (Part-Time)	27	3

### 7. Assessment

Each module will be assessed over 100 marks (i.e. expressed as %) with details as follows (unless otherwise specified):

Assessment will be based on a Written Examination of 2-hour duration, carrying a weighting of 70%, and Continuous Assessment carrying 30% of total marks for AGRI modules. Modules from other Faculties/Departments will carry a weighting of up to 30% for Continuous Assessment. Continuous Assessment will be based on laboratory/field works, and/or assignments, **but should include at least 1 class test.**

A minimum of at least 30% should be attained in each of Continuous Assessment and Written Examination, with an overall total of 40% for a candidate to pass a module.

All modules will carry 3 credits and weighting of 1.

**8. Important Note**

The rules as stipulated in this Programme Structure and Outline Syllabus will replace all other rules and regulations.

**9. List of Modules**

**CORE MODULES**

<u>Code</u>	<u>Module</u>	<u>Hrs/Yr L+P</u>	<u>Credits</u>
AGRI 1042Y(1)	Basic Animal Nutrition	30+30	3
AGRI 1043Y(1)	Introduction to the Biology and Management of Lactation	60+60	6
AGRI 1039Y(1)	Introductory Statistics and IT	30+30	3
AGRI 1044Y(1)	Introduction to Reproduction and Fertility	30+30	3
AGRI 2059Y(1)	Principles of Forage Evaluation and Utilisation	30+30	3
AGRI 2060Y(1)	Dairy Farm Management	30+30	3
AGRI 2061Y(1)	Introduction to Animal Health and Food Safety	30+30	3
AGRI 2062Y(1)	Tutorials and Field Visits	30+30	3
AGRI 2000Y(1)	Mini-Project	-	3

Total number of credits: 30

**10. Programme Plan – Certificate in Dairy Science**

**CORE MODULES**

**YEAR 1**

<u>Code</u>	<u>Module</u>	<u>Hrs/Yr L+P</u>	<u>Credits</u>
AGRI 1042Y(1)	Basic Animal Nutrition	30+30	3
AGRI 1043Y(1)	Introduction to the Biology and Management of Lactation	60+60	6
AGRI 1039Y(1)	Introductory Statistics and IT	30+30	3
AGRI 1044Y(1)	Introduction to Reproduction and Fertility	30+30	3

**YEAR 2**

<u>Code</u>	<u>Module</u>	<u>Hrs/Yr L+P</u>	<u>Credits</u>
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AGRI 2059Y(1)	Principles of Forage Evaluation and Utilisation	30+30	3
AGRI 2060Y(1)	Dairy Farm Management	30+30	3
AGRI 2061Y(1)	Introduction to Animal Health and Food Safety	30+30	3
AGRI 2062Y(1)	Tutorials and Field Visits	30+30	3
AGRI 2000Y(1)	Mini-Project	-	3

**Total number of credits: 30**

## 11. Outline Syllabus

### AGRI 1042Y(1) - BASIC ANIMAL NUTRITION

Nutritional needs of cows: water; energy; protein; fibre; vitamins and minerals. Changes in nutritional requirements of cows at different stages of lactation. Nutrition and young stock: milk-fed calf; replacement heifer. Nutrition and reproductive performance.

Digestive physiology: digestive system; carbohydrate digestion in the rumen; digestion of protein. Digestion of fats. Absorption of end-products of digestion. Factors controlling feed intake. Formulating a ration.

### AGRI 1043Y(1) - INTRODUCTION TO THE BIOLOGY AND MANAGEMENT OF LACTATION

Structure and function of the mammary gland. Milk production in the udder. What is milk? Lactose production. Fat production. Protein production. Regulation of milk secretion and removal. Effects of nutrition on milk composition. Lactation cycle: early lactation; mid-lactation; late lactation; dry period. Milk production and body condition. Milk analysis (protein, fat, total solids, solids not fat, pH).

Provision of energy and protein for lactation. Choosing energy and protein supplements. Feeding practices for optimum reproductive performance. Feeding systems for conserved and grazed forages. Milking techniques with focus on milk hygiene. Sanitation in dairy plants. Scoring body condition (BCS).

### AGRI 1039Y(1) - INTRODUCTORY STATISTICS AND IT

Nature of statistical data. Organisation and presentation of data. Measures of central tendency and dispersion. Probability distributions. Relationship between variables. Methods of data collection. IT and Computers. Input and Output Devices. Secondary Storage. Introduction to applications software.

### AGRI 1044Y(1) - INTRODUCTION TO REPRODUCTION AND FERTILITY

Management of reproduction. Structure and function of the male and female reproductive tract. Hormonal control of ovulation. Oestrus detection systems. Natural service and Artificial insemination technique. Timing of insemination. Management of dairy reproductive performance. Common reproductive problems

### AGRI 2059Y(1) - PRINCIPLES OF FORAGE EVALUATION AND UTILISATION

Pasture establishment and management. Maintenance of pasture. Selection of forage species. Effects of N, P, K fertilisers. Effects of defoliation. Effects of maturity. Mixed swards. Cut and carry feeding. Tree fodder. Sugarcane. Crop residues. Upgrading of low quality forages.

Forage conservation techniques: making quality silage; making hay. Laboratory assessment of nutritive value of grazed forages and conserved forages using manual and automated techniques (water; organic matter; crude protein; fibre – cellulose, hemicellulose, lignin; energy; calcium; phosphorus). *In-sacco* degradability.

#### **AGRI 2060Y(1) - DAIRY FARM MANAGEMENT**

Basic principles of economics. Basic farm management principles. Features of small holder dairying. Preparation and assessment of herd records. Preparation of farm budgets and cash flow. Business finance. Marketing. Support Services. Entrepreneurship.

#### **AGRI 2061Y(1) - INTRODUCTION TO ANIMAL HEALTH AND FOOD SAFETY**

General welfare. Factors affecting welfare. Examination and selection of healthy animals. Disease occurrence. Disease causing agents. Disease prevention. Response of animals to heat stress and strategies for its reduction. Housing systems. Waste management. Food safety.

#### **AGRI 2062Y(1) - TUTORIALS AND FIELD VISITS**

Tutorials are held to consider topical issues relevant to the dairy sector. Students present contribute to the discussion by sharing their own experiences. Visits are conducted to gain experience in techniques and to reveal the principles involved in dairy science.

#### **AGRI 2000Y(1) - MINI-PROJECT**

The project will be carried in the area of dairy science.

02 February 2009