



THE UNIVERSITY OF WEST INDIES  
ST. AUGUSTINE, TRINIDAD AND TOBAGO, WEST INDIES  
**The Open Tropical Forage-Animal Production Laboratory**  
**[OTF-APL]**  
**Department of Food Production**  
**Faculty of Science and Agriculture**  
Telephone: (868) 645-3232/662-2002 ext 2090/3328

**AGLS2004: LIVESTOCK PRODUCTS TECHNOLOGY**  
**[3 credits]**

**SEMESTER I 2012-2013**

**MODULE 1:**  
**Unit 1.1: COURSE INTRODUCTION**

Principal Lecturer and Course Coordinator  
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Professor of Livestock Science  
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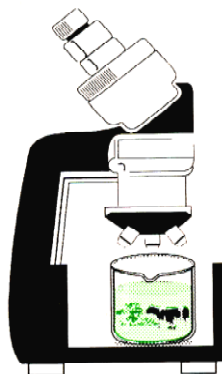
Room 212 Sir Frank Stockdale Building  
**Phone: 742-9430/662-2002 ext 83328/2090/2111**

Course Instructors:  
Teaching Assistants: Mrs. Michele Singh

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**COURSE AGLS2004 [AL26A]:  
LIVESTOCK PRODUCTS TECHNOLOGY**  
[3 Credits ]

**Unit 1.1 General Introduction**

**1.1.1 Welcome !!**

***Welcome to this very compact and interesting course  
on Livestock Products Technology!!!***

Some of you will be taking this as your only course on animals from the standpoint of utility. While for others this may lead you into a very interesting and rewarding world of animals. Here you may choose to spend the rest of your life.

I do hope that all students enjoy this course as much as I have enjoyed developing it for you and teaching it to wonderful learners like yourselves over the years.

**A very important feature of this course** [that was designed to help make your learning enjoyable] **is that the course has four (4) learning approaches:**

- **Didactic or Face to Face mode** i.e. You listening to the lecturers, but this year for the very first time, we shall be doing very little talking,
- **Farm and Livestock Facilities visits** i.e. You making your own observations within a real Animal Production Environment
- **Virtual tours and slides** i.e. You making your own observations within a real Animal Production Environment and
- **Future Simulation Game** i.e. you will learn by doing through group discussions, role playing and thinking about the future and making and listening to presentations. This will be the main focus of the learning method being used this year. This teaching methodology is being used again this year in this course. Last four years it was used for the first time anywhere in the world in the courses AGLS6502 Tropical Zoo and Wildlife Production and Management, and last year for the third time it was used in AGLS3003 Ruminant Production Systems. So far this teaching methodology has been enjoyed by all. We all had a wonderful time and I hope that this semester would be equally enjoyable for you all.

**I assure you, that if you work on the activities within the group or company to which you will be assigned this semester, that by the end of the 13th week of the semester you can walk out of the classroom and write the exam with ease!!**

## **Unit Objective**

This unit is going to describe for you the manner in which this course has been organized and how it will be conducted for your enjoyable learning.

**Please read carefully and understand the contents of this unit!!!!!!!!!!!!!!**

### **1.1.2 COURSE DESCRIPTION**

Technology of milk, meat, meat products and eggs; including quality, consumer demand, methods of storage, distribution and processing, preparation and market presentation. Skin preservation, processing and grading. Field Visits.

### **1.1.3 COURSE OBJECTIVES**

- (i) To highlight the elements of the tropics which must be managed for efficient extraction, harvesting and use of animal products by mankind.
- (ii) To outline the principles and methods used in the processing of livestock products for use in the developing tropics.

### **1.1.4 LEARNING OBJECTIVES**

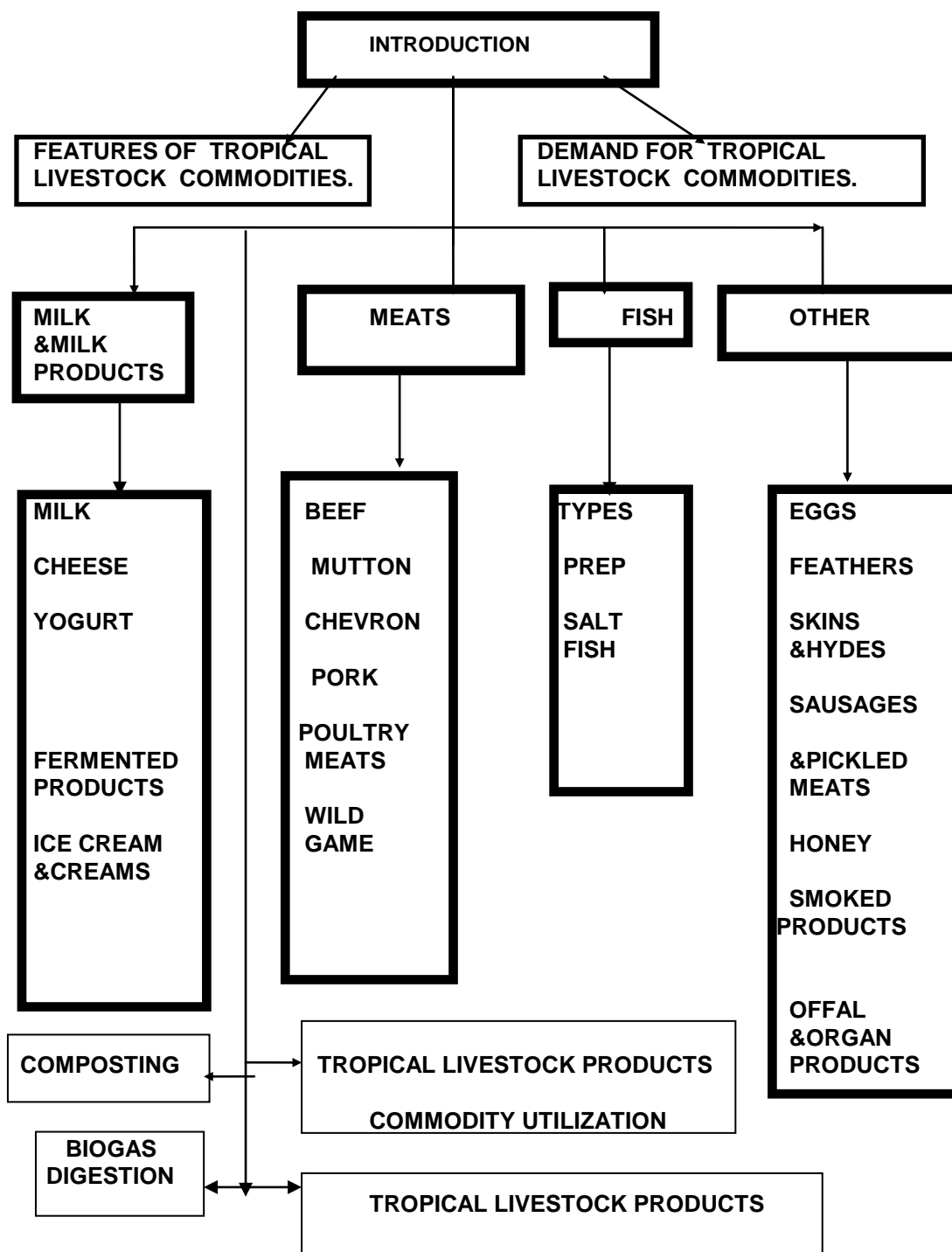
At the end of this course students should be able to do the following:

- (1) to list the elements of the Tropics that must be managed for efficient extraction, harvesting and use of animal products by mankind;
- (2) to list the composition of milk and milk products;
- (3) to list and describe the different fermentation processes in milk;

- (4) to list and describe the different types of milk products and the essential steps in their manufacture ;
- (5) to list some of the approaches to the grading and pricing of milk and to explain the reasons behind each approach ;
- (6) to list and briefly describe the different approaches to preserving all forms of meats;
- (7) to list and describe the different approaches used in describing cuts of beef;
- (8) to list and describe the different approaches to grading meats;
- (9) to describe the process of ageing of meats;
- (10) to list and describe the different approaches to making leather and preserving animal skins ;
- (11) to know what opportunities exist for the efficient use of animal parts conventionally known as wastes ;
- (12) to list and characterize the meats from poultry, pigs, fish, cattle, sheep, goats, and wild game ;
- (13) to know the technology and processes behind the handling and marketing of eggs;
- (14) to list and describe spoilage in fish;
- (15) to list and describe the different methods of improving the palatability of beef ;
- (16) to list and describe the factors affecting the demand for livestock products\_;
- (17) to know the composition of honey, harvesting honey, uses of honey, packaging and marketing of honey, grading of honey.

### 1.1.5 Course outline and lecture topics

Course Logic :



## 1.1.6 COURSE MODULES AND UNITS

<b>Module 1</b>	<b>Introduction</b>
<b>Unit 1.1</b>	<b>Introduction.</b> - How is this course organized? - How does this course relate to the other courses in the B.Sc. Livestock Production.
<b>Unit 1.2</b>	<b>Future Simulation game Instructions</b>
Unit 2	- General
Unit 3	- Features of Tropical Livestock Commodities - Factors affecting the Demand for and Use of Tropical Livestock Commodities
<b>Module 2</b>	<b>Milk and Milk Products</b>
Unit 1	Definition of Milk, Types of Milk, Milk Products used by Mankind Forms of Milk Products -Liquid Milk -Powdered Milk -Butter and Ghee
Unit 2	Fermented Milk Products - <b>Cheese</b> , Yogurt, Other Fermented Milk Products
Unit 3	- Ice Cream - Creams
<b>Module 3</b>	<b>MEATS</b>
Unit 1	Beef
Unit 2	Mutton and Chevron
Unit 3	Poultry Meats - Chicken Broilers, Spent Layers, Turkey , Ducks - Meats of Game animals and Game Birds
Unit 4	Pork
Unit 5	Rabbit and Rabbit Meat
Unit 6	Wild Game
<b>MODULE 4</b>	<b>EGGS</b>
Unit 1	Eggs
<b>MODULE 5</b>	<b>FEATHERS</b>
Unit 1	Feathers
<b>MODULE 6</b>	<b>FISH</b>
Unit 1	Types of Fish
Unit 2	Fish Preparation
Unit 3	Salt Fish
<b>MODULE 7</b>	<b>SKINS AND HIDES</b>
Unit 1	Leather
Unit 2	Edible Products



Unit 3	Inedible Products
<b>MODULE 8</b>	<b>SAUSAGES AND PICKLED PRODUCTS</b>
Unit 1	Sausages in General
Unit 2	Blood Products
Unit 3	Pickled Products
	- <b>Hams</b> , Bacon , Salted Products
<b>MODULE 9</b>	<b>SMOKED PRODUCTS</b>
Unit 1	Smoke and Smoking
<b>MODULE 10</b>	<b>OFFAL AND ORGAN PRODUCTS</b>
Unit 1	- Offal
Unit 2	- Organ Products
<b>MODULE 11</b>	<b>COMPOSTING</b>
Unit 1	Composting
<b>MODULE 12</b>	<b>BIOGAS DIGESTION</b>
Unit 1	Biogas Digestors
<b>MODULE 13</b>	<b>TROPICAL LIVESTOCK PRODUCTS COMMODITY UTILIZATION</b>
<b>MODULE 14</b>	<b>TROPICAL LIVESTOCK PRODUCT DEVELOPMENT</b>
<b>MODULE 15</b>	<b>HONEY</b>

### 1.1.7 Course Execution Methodology:

“How is this course organized for you to learn enjoyably? “

This course will be taught using **Didactic Teaching, Farm Based Observations and the Future Simulation Game** methods. This mixed approach to learning will now be described.

1. **Module 1 is the Course Introduction. Module 1 has two (2) parts. These are:**
  - a. **Unit 1.1 General Introduction**
  - b. **Unit 1.2 Livestock Products Technology Game Instructions**

*I do hope that you will find them to be lots of fun and very enjoyable!!!!!!!!*

2. In this course you would cover what was earlier described.
2. **Students would be divided into groups at the beginning of the semester. This would be your Company for Purposes of the Future Game Simulation.**

3. **Activities:** Students would be exposed to **two (2) main activities**, beside the limited number of Lectures.

4. **Activity #1: Visit to Livestock Facilities.**

**Activity #1 Expectations:**

**Each student would be expected to do an individual write up on a preformatted form.**

**Activity #2: Lab Reports**

**Activity #3: Future Game Simulation**

- (i) Each group would be given a Company's Name and the Instructions on how to play the game would be outlined in Unit 1.2
- (ii) **Note:** The Game and the Final Report and presentation would be a group effort.
- (iii) Attendance at all Presentations is mandatory.

**6. Course Work/ Student Marks**

<b>Activity #</b>	<b>Presentation</b>	<b>Write-up Participation &amp; Attendance</b>	<b>Total</b>
<b>2 Individual Projects</b>		<b>15%</b> [Due Wk ?]	<b>15%</b>
<b>#2 Lab Reports</b>		<b>5%</b>	<b>5%</b>
<b>#3 Company Future Simulation Presentation and Report</b>	<b>10%</b>	<b>10%</b>	<b>20%</b>
<b>Total</b>	<b>10%</b>	<b>30%</b>	<b>40%</b>

**7. About the Presentations**

The group would be **expected to make a presentation to the class on the Future of their company** as outlined in Unit 1.2.

The Group Presentation would be for fifteen (15) minutes with a further ten (10) minutes for questions and answers. Each group will therefore have twenty five (25) minutes allocated for their presentations. The presentation would be made to an Open University audience and would be evaluated as follows:

Content	40%
Evidence of Group Activity	10%
Visuals	10%
Clarity and Diction	10%
Response to Questions	20%
Time Utilization	<u>10%</u>
	<u>100</u>
	<u>%</u>

The Project Presentations would take place on the date scheduled in the course semester schedule.

The instructions for the company's written Report is outlined in Unit 1.2

## 1.1.8 LIVESTOCK PRODUCTS TECHNOLOGY [AGLS 2004]

### SEMESTER SCHEDULE September to December 2012

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**WEEK#1** Monday 3<sup>rd</sup> September [2-2:50pm, FSA B1]  
**September**  
**2<sup>nd</sup> – 8<sup>th</sup>** **INTRODUCTION**  
Course Logic, Introduction and Formation of Companies  
**Prof. Gary Garcia**

Tuesday 4<sup>th</sup> September [12-12:50pm, FSA B1]  
Features of Tropical Livestock Commodities  
Factors affecting the Demand for and Use of Tropical Livestock  
Commodities  
**Prof. Gary Garcia**

[agls2004-livestock-products-technology-2011@googlegroups.com](mailto:agls2004-livestock-products-technology-2011@googlegroups.com)  
but you will need to email me your email address at my e mail  
garygw1@gmail.com

Friday 7<sup>th</sup> September [12-1:50 pm, FSA FPL]  
Caribbean Livestock Industries  
**Mrs. Michele Singh**

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**WEEK #2** Monday 10<sup>th</sup>, [2-2:50 pm, FSA B1]  
**September**  
**9<sup>th</sup> – 15<sup>th</sup>** **MILK and MILK PRODUCTS**  
**Prof Gary Garcia**

Tuesday 11<sup>th</sup> [12-12:50 pm, FSA B1]  
MILK and MILK PRODUCTS

Friday 14<sup>th</sup> September [12-1:50 pm, FSA FPL]  
Feathers

**Mrs. Michele Singh**

**WEEK#3**  
**September**  
**16<sup>th</sup> – 22<sup>nd</sup>**

**Monday 17<sup>th</sup> [2-2:50 pm, FSA B1]**

**GAME SESSION 1: LET THE GAME BEGIN**

**Dr Gary Garcia**

**Tuesday 18<sup>th</sup> [12-12:50 pm, FSA B1]**

**GAME SESSION 2: Companies to meet and continue developing their work plans**

**Dr Gary Garcia**

**Friday 21<sup>st</sup> [12-1:50 pm, FSA FPL]**

The potential for Neo-tropical wild animal products

**Mrs. Michele Singh**

**Weekend Field Trips**

**Sunday 23<sup>rd</sup>**

**Sugarcane Feeds Centre**

Depart Sir Frank Stockdale Building 8:00 am

- SFC Abattoir
- SFC Animal Facilities
- SFC Bio Gas Digestor
- Composting
- Forages
- **Lunch and GAME SESSION 3**

**WEEK#4**  
**September**  
**23<sup>rd</sup> - 29<sup>th</sup>**

**MEAT PRESERVATION AND SUSAGES**

**Monday 24<sup>th</sup> September REPUBLIC DAY**

**Tuesday 25<sup>th</sup> September [12-12:50pm, FSA B1]**

Meats and Meat Products

Methods of Meat Preservation

Pickled Meats

Ageing of Meats

Other meat products

**Friday 28<sup>th</sup> September [12-1:50 pm FSA FPL]**

CHEESE AND ICE-CREAM LABORATORY

**Laboratory 1 [cheese & ice-cream]**

**Mrs. Michele Singh**

**Saturday 29<sup>th</sup> September**

Depart Sir Frank Stockdale Building 5:30 am

- UFS Milking and Milking Management
- UFS Milk Processing Unit
- UFS Abattoir
- Forages
- Poultry Housing

Centeno Livestock Station: Small Ruminants

Return to Campus 3:00pm

**Sunday 30<sup>th</sup> September**

Depart Sir Frank Stockdale Building 7:30 am

Marilisa Farms Penal

Dairy Goat Milk Processing Facilities

**WEEK#5      Monday 1<sup>st</sup> October [2-2:50 pm, FSA B1]**

**GAME SESSION 4**

**30<sup>th</sup> Sept-  
6<sup>th</sup> October      Tuesday 2<sup>nd</sup> October [12-12:50pm, FSA B1]**

Factors affecting influencing fish spoilage

Fish processing

Innovative uses of fish and fish products

**Dr Marsha Singh**

**Friday 5<sup>th</sup> October [12-1:50 pm, FSA FPL]**

Factors affecting influencing fish spoilage

Fish processing

Innovative uses of fish and fish products

**Dr Marsha Singh**

**Lab Reports Due !!!!!!!!!!!!!!!**

**FIELD TRIP REPORT DUE - Mrs. Michele Singh to collect**

**WEEK #6      TANNING and LEATHER MAKING**

**October      Monday 8<sup>th</sup> October [2-2:50 pm, FSA B1]**

**7<sup>th</sup> – 13<sup>th</sup>** Different approaches to making leather and preserving animal skins

Factors affecting the demand for leather

Innovative leather uses and products

**Mrs Michele Singh**

**Tuesday 9<sup>th</sup> October [12-12:50pm, FSA B1]**

Different approaches to making leather and preserving animal skins

Factors affecting the demand for leather  
Innovative leather uses and products  
**Mrs. Michele Singh**

**Friday 12<sup>th</sup> October [12-1:50 pm, FSA FPL]**

Different approaches to making leather and preserving animal skins  
Factors affecting the demand for leather  
Innovative leather uses and products  
**Mrs. Michele Singh**

**WEEK#7**  
**October**  
**14<sup>th</sup> –**  
**20<sup>th</sup>**

**Monday 15<sup>th</sup> October [2-2:50 pm, FSA B1]**

Sausages  
**Gary Garcia**

**Tuesday 16<sup>th</sup> October [12-12:50pm, FSA B1]**

Offal and organ products

**Friday 19<sup>th</sup> October [12-1:50 pm, FSA FPL]**

**GAME SESSION 5**

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**WEEK#8**  
**October**  
**21<sup>st</sup> – 27<sup>th</sup>**

**Monday 22<sup>nd</sup> [2-2:50 pm, FSA B1]**

**Tuesday 23<sup>rd</sup> October [12-12:50pm, FSA B1]**

**Friday 26<sup>th</sup> October [12-1:50 pm, FSA FPL]**

**Laboratory 2**

SALTFISH

**Mrs. Michele Singh**

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**WEEK #9**  
**October**  
**28<sup>th</sup> –**  
**November**  
**3<sup>rd</sup>**

**Monday 29<sup>th</sup> [2-2:50 pm, FSA B1]**

Eggs  
**Gary Garcia**

**Tuesday 30<sup>th</sup> [12-12:50pm, FSA B1]**

Composting & Biogas digestors  
**Gary garcia**

**Friday 2<sup>nd</sup> November**

The composition of honey, harvesting honey, uses of honey,  
packaging and marketing of honey, grading of honey.

Factors affecting the demand for honey.  
Innovative honey uses and products  
**Mr. Louis Farrell**

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**WEEK #10** **Monday 5<sup>th</sup> November [2-2:50 pm, FSA 114]**

**November**  
**4<sup>th</sup> – 10<sup>th</sup>** Adding Value to Livestock Products  
**Michele Singh**

**Tuesday 6<sup>th</sup> November [12-12:50pm, FSA 114]**

Product development  
**Gary Garcia**

**Friday 9<sup>th</sup> November [12-1:50 pm, FSA FPL]**

The composition of honey, harvesting honey, uses of honey,  
packaging and marketing of honey, grading of honey.  
Factors affecting the demand for honey.  
Innovative honey uses and products  
**Mr. Louis Farrell**

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**WEEK #11** **Monday 12<sup>th</sup> [2-2:50 pm, FSA 114]**

**November**  
**11<sup>th</sup> -17<sup>th</sup>** **GAME SESSION 6**

**Tuesday 13<sup>th</sup> [12-12:50pm, FSA 114]**

**DUVALI- Public Holiday**  
**GAME SESSION 7**

**Friday 16<sup>th</sup> November [12-1:50 pm, FSA FPL]**

**GAME SESSION 8**

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**WEEK #12** **Monday 19<sup>th</sup> [2-2:50 pm, FSA 114]**

**November**  
**18<sup>th</sup> –**  
**24<sup>th</sup>** **PRESENTATIONS**

**Tuesday 20<sup>th</sup> [12-12:50pm, FSA 114]**

**PRESENTATIONS**

**Friday 23<sup>rd</sup> November [12-1:50 pm, FSA FPL]**

**PRESENTATIONS**

**Lab Reports Due !!!!!!!!!!!!!!!**

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**WEEK #13** **Monday 26<sup>th</sup> [2-2:50 pm, FSA 114]**

**November**  
**25<sup>th</sup>** **PRESENTATIONS**

**December** **Tuesday 27<sup>th</sup> [12-12:50pm, FSA 114]**

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1<sup>st</sup>

**PRESENTATIONS**

**Friday 30<sup>th</sup> November [12-1:50 pm, FSA FPL]**

**PRESENTATIONS**

**Company Reports Write up due !!!!!!!!!!!!!!!!**

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## 1.1.9 LABS



The Labs would be described in the Lab Handout.

### ***Format for Practical Write up***

**Course Code and Title:**

**Practical #:**

**Practical Title:**

**Student #:**

**Introduction:**

**Rationale**

**Objectives**

**Materials and Methods:**

**Apparatus and Equipment used**

**Procedure**

**Results:**

**Discussion:**

**Conclusion:**

**References:**

### 1.1.10 THE GROUPS / COMPANIES

Company 1 Dairy Farmers Co- operative	Company 2 Multiple Processing Facility	Company 3 Ruminant Farmers Association	Company 4 Small Pig Farmers Association	Company 5 Poultry Farmers Association	Company 6 Veterinary Public Health

#### **Closing Note**

Please become familiar with the course guidelines.

## 1.1.11 COURSE TEXT AND MODULES

This is available from the website

**[www12.brinkster.com/ostasp/index.aspx](http://www12.brinkster.com/ostasp/index.aspx) or from the Group email account.**

### ESSENTIAL TEXT

Garcia, G. W., Young G., and John, M.(1997): *Course Manual and Recommended Readings: AL26A-Livestock Products Technology*

### RECOMMENDED TEXTS:

#### **General:**

Acker, D and Cunningham, M. (1991): Animal Science and Industry. 4th edition Prentice Hall Inc, New Jersey.

Montagne, P. (1983): New Larousse Gastronomique Hamlyn. London, Seventh Impression

Mountney, G. J. (1983): Poultry Products Technology. AVI Publishing, Westport, Connecticut, USA, Second Edition

Payne, W.J.A. (1990): An Introduction to Animal Husbandry in the Tropics. ELBS, Longman, UK, 4th Edition

#### **Microbial Processes, Composting and Biogas:**

BOSTID (1979): Microbial Processes: Promising Technologies for Developing Countries. National Academy of Sciences, Washington D.C.

BOSTID (1981): Food, Fuel and Fertilizer from Organic Wastes. National Academy of Sciences, Washington D.C.

#### **Meat and Dairy Products:**

Ebing, P. and Rutgers, K, (1991): The Preparation of Dairy Products. AGRODOK 36, CTA, Wageningen, Holland, Second Revised Edition [Revised by: Muller, R. and Weijenberg, M]

Ensminger, M. E. (1983): The Stockman's Handbook. The Interstate Printers and Publishers, Inc., Danville, Illinois, USA, Sixth Edition

FAO (1978): slaughterhouse and slaughterslab design and construction. FAO Animal Production and Health Paper #9, FAO, Rome

Kosikowski, F. (1982): Cheese and Fermented Milk Foods. F. V. Kosikowski and Associates, Brooktondale, New York, USA, Second Edition- 3rd Printing

Lawrie, R. A. (1985): Meat Science. Pergamon Press, Fourth Edition, UK

NESTLE (?): Milk and Milk Products. Attinger S. A., Neuchatel, Switzerland, [Located at the Dept of Agricultural Extension Library].

Mettler, J. J. (1986): Basic Butchering of Livestock and Game, Garden Way Publishing, Storey Communications Inc., Pownal, Vermont 05261, USA

Pearson, A. M. and Tauber, F. W. (1984): Processed Meats. AVI Publishing, Westport, Connecticut, USA, Second Edition

Romans, J.R., Carlson, C. W., Costello, W. J., Greaser, M. L. and Jones, K. W. (2001): The Meat We Eat, Fourteenth Edition, Interstate publishers, INC, Danville, Illinois  
Text Book of Meat Hygiene

### ***Leather, Hides and Tanning:***

International Labor Organization (1985) : Tanning of Hides and Skins. Technology Series, Technical Memorandum No 1, International Labor Organization, Geneva

### ***Honey:***

Segeren, P (1991): Beekeeping in the Tropics. AGRODOK 32, CTA, Wageningen, Holland, Third Revised Edition [Revised by: Mulder, V., Beetsma, J. and Sommeijer, R.]

### ***Poultry:***

USDA (1967): Home Freezing of Poultry. United States Department of Agriculture, Home and Garden Bulletin #70, Washington DC, USA

USDA (1977): Home Canning of Meat and Poultry. United States Department of Agriculture, Home and Garden Bulletin #106, Washington DC, USA

USDA (1991): US Inspected Meat and Poultry Packing Plants: A Guide to Construction and Layout. United States Department of Agriculture, Food Safety and Inspection Service, Agriculture Handbook 570, Washington DC, USA

### ***Aquatic Foods:***

Wheaton, F. W. and Lawson, T. B. (1985): Processing Aquatic Food Products. John Wiley and Sons, New York, USA

### **FURTHER READINGS**

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## **VIDEO TAPES**

Please note that these video tapes are housed in the audio visual room on the third (3<sup>rd</sup>) floor of the main library. Arrangements will have to be made with the librarian in charge of the Floor (Mr. R. Clarke) for groups to view the tapes. These tapes are all very informative and should be viewed by each student at least once.

### ***Beef***

8. Beef Forequarter: Fabrication & Retail Identification VHS; 18 minutes : Call # : TS1962.B443 1999
9. Beef Grading: Quality VHS; 27 minutes : Call # : TS373..B4 1998
10. Beef Grading: Yield VHS; 31 minutes : Call # : SF140.C37 B44 1998
11. Beef Hindquarter: Fabrication & Retail Identification VHS; 18 minutes : Call # : TS1960.B44 1999
15. Beef Slaughter and Dressing VHS; 18 minutes : Call # : TS1960.B43
51. Meat Judging Fundamentals VHS; 50 minutes : Call # : SF140.C37 M43 1998

### ***Mutton***

36. Lamb Carcass Fabrication VHS; 24 minutes : Call # : TS1963.L3 1991
37. Lamb Retail Cut Identification VHS; 17 minutes : Call # : TS1962.L36 1992
38. Lamb Slaughter and Dressing VHS; 28 minutes : Call # : TS1960.L363 1991

### ***Poultry***

25. Evaluation of Ready to Cook Turkeys and Broilers VHS; 56 minutes : Call # : SF498.7 E82 1990

33. Identification of Poultry Parts and Poultry Patty Judging VHS; 59 minutes : Call # : SF485. I34 1994

34. Introduction to Poultry Judging VHS; 23 minutes : Call # : SF485. I58

56. Poultry Judging VHS; 59 minutes : Call # : SF 485. J83 1994

***Eggs***

22. Egg Grading VHS; 56 minutes : Call # : SF 490.7 E33 1994

***Pork***

54. Pork Carcass Fabrication VHS; 25 minutes : Call # : TS1963. P6 1991

55. Pork Retail Cut Identification VHS; 27 minutes : Call # : TS1962. P67 1988

67. Swine Slaughter and Dressing VHS; 30 minutes : Call # : TS1960. S95 1990