**DebreMarkos University**

**College of Agriculture and Natural Resource**

**Department: Animal Science**

**Equine production and Draft Animal Power Utilization Course Guide Book/Syllabus**

**Course Title: Equine production and Draft Animal Power Utilization**

**ECTS: 5**

**CrHr: 3(2+1)**

**Course Code: An. Sc. 3093**

Pre-requisites: No

Course objectives:

* Describe the most commonly used draft animal.
* Balance an equine ration.
* Describe equine nutritional disorders.
* Equip students on the selection methods and training of equines.
* Know the role of draft animals in developing countries
* Understand the attributes of different species of draft animals
* Equip students on the use of harnessing equipments.
* Know methods of assessment of force and work output from draft animals
* Evaluate different species of draft animals along with different implements
* Know about draft implements and harnessing system
* Explain the different management practices and its importance for draft animals in relation to work output.

**Theory:** Under this course the following major topics will be discussed. Equine species and their distribution, production methods, breeding, feeding, management, disease and disease controls, housing and routine management practices. Evaluation of physical characters of draft animals, selection of animals for draft purposes , basic principles to train animals for work, different types of animal drawn implements, health care of draft animals, harness and harnessing, making the double withers yoke for plowing and field visits.

**Practical:**

* + Equine production, feeding, management practices
  + Evaluation of the physical traits of Draft animal power
  + Selection of Draft animal power for production & work
  + Application of basic principles to train animals for work
  + Evaluation of Draft animal power implements, harness & harnessing systems
  + Management of Draft animal power
  + Record Keeping

**Learning Outcome:** At the end of the course the learners will be enable to:

* + Known different species of equine and their role in rural day to day life
  + Know the role of draft animals in developing countries
  + Understand the attributes of different species of draft animals
  + Know methods of assessment of force and work output from draft animals
  + Evaluate different species of draft animals along with different implements
  + Know about draft implements and harnessing systems
  + Explain the different management practices and its importance for draft animals in relation to work output

**Chapter 1. INTRODUCTION** (one periodx2:18/6/2012)

1.1. Definition of Terminologies

1.2. Role of Draft animal power in Developing Countries

1.3. Scope and Development of Draft & Pack Animals

1.4. Distribution of Draft animal power in Developing Countries

1.5. Major Constraint of Draft animal power Utilisation

**Chapter 2. Common Draft Animal Species and their Attributes** (one periodx2: 25/6/2012)

2.1. Cattle

2.2. Buffaloes

2.3. Horses

2.4. Donkeys

2.5. Mules

2.6. Camels

**Chapter.3. Equine Production** (Two periodsx2: 2/7/2012-9/7/2012)

3.1. Zoological Classification of Equines

3.2. Breeds of Equnes

3.3. Equine production systems

3.4. Reproduction and Breeding in Equines

3.4.1.Reproductive system of Equines

3.4.2. Estrus cycle and Breeding in Equines

3.4.Feeds and Feeding of Equines

3.6. Housing and routine management practices of Equines

3.7. Common Equine Disease and their control methods

**Practical session:**

Equine production systems, reproduction,estrus detection, feeding,housing and other rouine management practices

**Chapter 4. Selection and Training of Draft animals** (two periodsx2:16/7/2012-23/7/2012)

4.1.Selection of species

4.1.1. Qualities to be considered During Selection of draft animal species

4.2. Selection of Draft animals with in a species

4.2.1. Qualities to be considered During Selection of individual Animals

4.2.2. Cattle Selection

4.2.3. Selection of Horses, Donkey and Mule

4.3. Training Working Animal

4.3.1. Handling and Training of Cattle

4.3.2. Training Principles

4.3.3. The Qualities of Good Trainer

4.3.4. Duration of training

4.4. Handling and training of equine species

4.4.1. Training Principles

4.4.2. The Qualities of Good Trainer

4.4.3. Duration of training

**Practical Session**

1. Evaluation of the physical traits of draft & Pack animals
2. Selection of Draft animal power for production & work
3. Application of basic principles to train animals for work

**Chapter 5. Harnesses and Implements of draft animalpower** (Three periodsx2: 30/7/2012-15/8/2012)

5.1.Types of Harnesses

5.1.1.Yokes

5.1.2.Collar and breast band harnesss

5.2.3.Load carrying and pack saddles

5.2. Types of Harnesses for Cattle

5.3. Types of harnesses for equines

5.4. Types of Harnesses for camels

5.5. Primary Tillage Implements

5.5.1 Single Furrow Mould Plough

5.5.2 Ridging plough (Ridger)

5.5. Secondary Tillage Implements.

5.6. Planting Equipments

5.4.1. Furrow Openers or Row Markers

5.4 .2. Planters

5.5. Weeding Implements

5.6. Transport Equipment

5.6.1 Carts

5.6.2. Pack Transport

**Practical Session**

Evaluation of Draft animal power implements, harness & harnessing systems

**Chapter 6. Performance assessment of Draft animal Power** (Two periodsx2: 22/8/2012-29/8/2012)

6.1. Some mechanical principles and Basic units to Measure Performance

6.1.1 Forces and vectors

6.1.2. Work and power

6.1.3. Levers

6.2. Units Associated with Work.

6.2.1. Techniques to Assess Draft Animal power Performance

6.2.2. Measurements at Field Condition

6. 3.Dietary Energy Requirements of Working Animal

6. 4. Energy Available for Work

**Chapter 7. Management of different Draft animal power** (Two periods: 6/9/2012-13/9/2012)

7.1. Housing of Draft animal power

7.1.1. Housing Cattle

7.1.2. Housing Equines

7.2. Feeding and Nutritional Requirement of Draft animal power

7.2.1. Feeding and Nutritional Requirements of Cattle

7.2.1.1. Nutritional Related Problems in cattle

7.2.2.Feeding and nutritional requirenment of equines

7.2.2.1. Nutritional Related Problems in Equines

7.3. Health care and welfare of Draft animal power

7.3.1. Health care and welfare of equines

**Practical Session**

1. Management of Draft animal power

**Chapter .8. Record Keeping in Draft Animal power Utilization** (one period : 20/9/2012)

8.1. The Importance of Record Keeping

8.2. Different Record Formats

**Practical Session**

1. Record Keeping

**References:**

1. Berihane Mekete & Nigusie Bekele. 2000. Draft Animal Power Module. For chapter1-10
2. Brown H. & Smith P.1995. Horse & Stable Management. 2nd Black Well Science, Combride University, Great Britain.
3. Frape D. 1994. Equine Nutrition and Feeding. New York, U.S.A.
4. Petheram R.J. &Astatike A. 1989. Research on Draft animal Power in Indonesia, Australia.
5. Starkey P. 1989. Harnessing and Implements for Animal Traction. Animal Traction Resource Book for Africa. Chap 1-chap 10
6. The united Republic of Tanzania Ministry of Agriculture and Food Security, 2003. Animal Power, Technical Hand Book No:13. Dares Salaam, Tanzania.

**Course start:** 18/6/2012-

**Class end:** 20/9/2012

**Course coverage:**

Chap.1 – Chap. 4 --18/6/2012-23/7/2012

Chap. 5 – Chap. 8 ---30/7/2012-20/9/2012

Final Exam. : 27/9/2012-3/10/2012

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| **Assessment Metods** | **Topics** | **Schedule** | **Weight (%)** |
| Test | Chap.1-4 | 2/7/2012 & 30/7/2012 | 20 |
| Group Assignment and presentation | Chap.1-8 | 25/6/2012-13/9/2012 | 10 |
| Quiz |  |  | 10 |
| Practical report |  | 16/7/2012-20/9/2012 | 10 |
| Final examination | Chap.5-8 | 27/9/2012-3/10/2012 | 50 |
| Total | | | 100 |