The Hebrew University of Jerusalem

Syllabus

ADVANCED RUMINANT NUTRITION AND FEEDING - 73803

Last update 12-09-2024

HU Credits: 2

Degree/Cycle: 2nd degree (Master)

Responsible Department: Animal Sciences - International Program

Academic year: 0

Semester: 1st Semester

Teaching Languages: English

Campus: Rehovot

Course/Module Coordinator: Dr. Sameer Mabjeesh

Coordinator Email: sameer.mabjeesh@mail.huji.ac.il

Coordinator Office Hours: By appointment

Teaching Staff:

Prof Sameer Mabjeesh

Course/Module description:

In this course the following will be addressed: Basic feeds characteristic of ruminants and laboratory methods for measuring quality of forage. Seasonal changes that affect plants maturation, chemical and physical composition. Forage preservation methods. By product feeds including human food industry and recycled matters. The effect of physical and chemical treatments of concentrate and roughage feedstuffs on their nutritional values. Models of ruminant nutritional requirements of energy and protein and the use of linear programming to prepare rations for productive animals. Introduction for mathematical modeling for measuring the different Nitrogen pathways in the digestive tract and pooling. The effect of feeding on digestion, absorption and post-absorptive partitioning of nutrients to the productive tissues. The influence of feeding on the membrane transporters in the small intestine and udder will be addressed.

Course/Module aims:

1. To study the basic feeds characteristic of ruminants
2. To study laboratory methods for measuring quality of forage
3. To study the effects of seasonal changes on plants maturation, chemical and physical composition.
4. To study forage preservation methods.
5. To study by-product feeds including human food industry and recycled matters.
6. To study the effect of physical and chemical treatments of concentrate and roughage feedstuffs on their nutritional values.
7. Models of ruminant nutritional requirements of energy and protein and the use of linear programming to prepare rations for productive animals.

Learning outcomes - On successful completion of this module, students should be able to:

1. Recognize the relationship between diets, feedstuffs, and healthy rumen physiology
2. Analyze rations
3. Distinguish between feedstuffs
4. Formulate diets
5. Calculate metabolic protein and amino acids requirements

Attendance requirements(%):

100

Teaching arrangement and method of instruction: frontal Lectures

Course/Module Content:

1 Introduction to feeds and basic anatomy of the digestive tract
2, 3 Methods for measuring feedstuffs values-including the use of markers and mathematical models for pooling nutrients
4,5 Roughage feeds and preservation
6,7 Concentrates feed and processing
8,9 By products feeds –fat supplements
10 Crude protein & metabolic crude protein- including advanced models for predicting requirements
11 Amino acids & crude protein requirements, including advanced models for predicting amino acid partitioning to udder
12 Energy: metabolic and net energy for production- including advanced models for predicting
13 - effect of CHO on transport activity and abundance in the small intestine
14 Introduction to feeds formulations and linear programming

Required Reading:

-

Additional Reading Material:

-

Grading Scheme:

Presentation / Poster Presentation / Lecture/ Seminar / Pro-seminar / Research proposal 90 %
Attendance / Participation in Field Excursion 10 %

Additional information:

-