

Animal production

Courses - prescription:

BCH 530 : BIOCHEMICAL METHODOLOGY 3(0+3)

Spectrometry: spectrophotometry (scanning) , J.R. analysis , spectrofluoremetry .

Chromatography : purification of proteins , affinity and / or hydrophobic chromatography .Electrophorasisim : (e.g. L.D.H. polymacrylamide gel electrophoresis Isoanzymes), Polyacrylamide gel Electrophoresis (molecular weight determination), Emmunoelcrophorosis . Centrifugation : sub-cellular fraction , molecular weight determination by sucrose density gradient .Radioactive counting and Gas chromatography of lipids . radioimmunoassay
Transport of ions in biomembranes

ANPR 611: ADVANCED GENETIC IMPROVEMENT 2(2+0)

Predicting breeding values using mixed Animal model - Applications of mixed model in: selection, dominance, embryo transfer and embryo splitting - Selection using gene marker - Genetic resistance to diseases - Response to selection for multiple traits with continuous and discrete distributions.

ANPR 612 : SELECTED TOPICS IN ANIMAL BREEDING

2(2+0)

Genetic-environment interaction - Estimation of variance components - Genetic evaluation of bulls by INTERBULL - Crossing data analysis: heterosis and maternal effect.

ANPR 613 : SELECTED TOPICS IN POULTRY BREEDING

2(2+0)

Direct and correlated responses to selection - Selection and reproductive fitness - restricted and no restricted selection indices - limits of selection - Inbreeding and heterosis.

ANPR 621 : ENERGY METABOLISM 2(2+0)

Sources of energy in feedstuffs - Carbohydrate and fat digestion, absorption, and metabolism - Disorders of energy metabolism - Control of energy utilization for production - Measurement of energetic efficiency - Factors affecting body thermo genesis.

ANPR 622 : VITAMIN AND MINERAL METABOLISM 2(2+0)

Functions and characteristics of vitamins and minerals
 - Sources of vitamins and minerals in feedstuffs -
 Vitamin metabolism - Macro- and micro-mineral
 metabolism - Vitamin and mineral requirements -
 Vitamin and mineral deficiency - Vitamin and mineral
 toxicity.

ANPR 623 : PROTEIN METABOLISM 2(2+0)

Protein digestion in ruminants and monogastrics -
 Metabolic pathways of amino acids - Nitrogen balance -
 Hormonal regulation of amino acid bio-availability -
 Amino acid balance, imbalance, antagonism, and
 toxicity - Protein-energy relationship - Bioassay of
 protein quality and amino acid metabolism .

ANPR 631 : HORMONAL REGULATION IN FARM ANIMALS 2(2+0)

Developments in molecular biology - Hormonal
 receptors and receptor regulation - Gene regulation by
 hormones - Molecular evolution of the endocrine
 system - Hormonal inter-relationships - Hormonal
 regulation of production: regulation of lactation, growth,
 reproduction and adaptation .

ANPR 632 : ENVIRONMENTAL PHYSIOLOGY OF FARM ANIMALS 2(2+0)

Bioclimatology and adaptation - Thermoregulation in
 farm animals - Impact of the environment on: vital body
 functions, growth, milk production and reproduction -
 Physiological and anatomical adaptations.

ANPR 633 : ENVIRONMENTAL PHYSIOLOGY OF POULTRY 2(2+0)

Recent trends and applications of molecular and
 immunological techniques in stress physiology -
 Advances in temperature regulation and stress
 physiology in poultry - Impact of environment on: vital
 body functions, growth, metabolism and reproduction -
 Management of environmental stresses

ANPR 634 : DIGESTIVE PHYSIOLOGY OF RUMINANTS 2(2+0)

Comparative physiology of digestion - Behavioural
 physiology and nutrition - Microbial ecosystem of the
 rumen - Rumen digestion characteristics - Manipulation
 of rumen digestion - Mineral metabolism - Intermediary
 metabolism - Problems related to the digestive tract.

ANPR 635 : DIGESTIVE PHYSIOLOGY OF MONOGASTRICS**2(2+0)**

Comparative physiology and anatomy of the digestive tract - Ontogenesis of the digestive tract - Motor activity and digestive transit - Neurohormonal control - Digestion and absorption of proteins, lipids and carbohydrates - Secretion and absorption of electrolytes.

ANPR 636 : SELECTED TOPICS IN ANIMAL REPRODUCTION**2(2+0)**

Collection and *in vitro* maturation and fertilization of ova in farm animals - Cloning by nuclear transfer and embryo splitting in livestock - Establishment of embryonic stem cells and potential applications - Prospects of producing transgenic farm animals

ANPR 637 : SELECTED TOPICS IN FERTILITY AND HATCHABILITY**2(2+0)**

Artificial insemination and fertility - Factors affecting fertility and hatchability - Embryo growth and development - Factors affecting embryo development - Modern hatchery systems.

ANPR 641 : ADVANCED DESIGN OF LIVESTOCK EXPERIMENTS**2(2+0)**

Unbalanced data analysis using fixed, random and mixed linear models - Nonlinear models in data analysis - Categorical data analysis - Maximum Likelihood and Restricted Maximum Likelihood - Bayesian analysis - Time series for data analysis.

ANPR 642 : GROWTH IN FARM ANIMALS**2(2+0)**

Hormonal control of protein and adipose tissue growth - Muscle protein and adipose tissue accretion - Control of bone growth - Energetic efficiency of livestock growth - Potential uses of genetic variation in livestock growth - Methods of growth measurement - Impact of exogenous substances on livestock growth.

ANPR 643 : SELECTED TOPICS IN MILK PRODUCTION**2(2+0)**

New developments in milk production technology - Differentiation and gene expression in mammary gland cells - Mammary gland physiology- Hormone receptors in mammary gland cells - Recent management techniques of dairy farms - Alternative methods for reducing the effect of environmental stressors.

ANPR 644 : SELECTED TOPICS IN ANIMAL HEALTH**2(2+0)**

Recent trends in epidemiological and economic studies of animal diseases - Emerging animal diseases - Applications of biotechnology in the diagnosis and control of diseases - Advances in the development of animal vaccines.

**ANPR 645 : SELECTED TOPICS IN POULTRY HEALTH
2(2+0)**

Selected topics in the epidemiology and the economics of poultry diseases - Emerging poultry diseases - Recent developments in diagnosis and control of poultry diseases - Recent advances in poultry vaccine production.

**ANPR 646 : SELECTED TOPICS IN MEAT PRODUCTION
2(2+0)**

Recent trends in utilization of feed additives and growth promotants - Selected topics in environmental and genetic factors affecting ante- and post-mortem meat quality - Ultra-structure of muscle fibers.

**ZOO 651 : MOLECULAR GENETICS
2(2+0)**

Control of gene expression and enzyme differentiation , hormonal control of gene expression , genetic polymorphism among enzyme loci , molecular population , genetic and its techniques , DNA sequencing , genetic factors in developmental regulation and the molecular basis of the cytoplasmic inheritance .

ANPR 700: THESIS