

**Endocrinology, Physiology of Reproduction and Ethology of Domestic Animals
(5 CFU: 48 hours lectures 7 hours practical activities/student)**

MODULE 1

24 hours lectures and 3 hours practical activities/student

At the end of module 1 the student should know in details the fundamental mechanisms regulating the reproductive activity of domestic animals.

Lectures

GENERAL TOPICS	TOPICS	SPECIFIC CONTENTS	HRS
<i>SEXUAL ENDOCRINOLOGY (24 hours)</i>	Introduction	Presentation of the course	0.5
	General endocrinology	Hormone chemistry, transport, receptors and mechanisms of action. Regulation of hormone secretion and activity. Pituitary and hypothalamic hormones.	1.5
	Puberty	Physiology of puberty. Factors affecting the time of puberty.	1.5
	Regulation of ovarian activity	Folliculogenesis and its hormonal regulation. Oocyte maturation. Endocrine control of ovulation. Corpus luteus. Luteolysis.	3
	The estrous cycle	Estrous cycle: general aspects and species-specific characteristics. Estrous behaviour. Dog and cat estrous cycle.	4.5
	The male	Male reproductive system. Hormonal regulation of the reproductive function. Spermatogenesis.	2
	Fertilization	Transport of spermatozoa in the female genital tract. Sperm capacitation. Fertilization and embryo development.	3
	Pregnancy	Pregnancy recognition and maintenance of corpus luteum. Hormone production during pregnancy.	2
	Parturition and postpartum	The endocrinology of parturition. Maternal behaviour. Lactational anestrus, postpartum anestrus.	4
	Physiology of lactation	Mammogenesis, lactogenesis, galactopoiesis and mammary involution. The milk ejection reflex. Synthesis of milk components.	2

Practical activities

<i>Practical activities (3 hours)</i>	Physiology of reproduction in the female	Practical activities on the female genital tract in livestock species. Classification of ovaries depending on the stage of the estrous cycle: species differences.	1
	Physiology of reproduction in the male	Sperm evaluation: viability, sperm concentration, motility.	2

MODULO 2

24 hours lectures and 4 hours practical activities/student

At the end of module 2 the student will understand and know animal behavior, will be able to set up ethological and behavioral investigations as well as metabolic endocrinology

Lectures

GENERAL TOPICS	TOPICS	SPECIFIC CONTENTS	HRS
ENDOCRINE REGULATION OF GROWTH AND METABOLISM <i>(TOT. 9 hours)</i>	<i>Metabolic Hormones</i>	The thyroid gland: biosynthesis, secretion, transport and metabolism of thyroid hormones. Physiological and metabolic action of thyroid hormones. Hypo- and hyperthyroidism effects.	2
		The endocrine pancreas. Insulin and glucagon: structure, synthesis, secretion and metabolism. Major effects of pancreatic hormones. Consequences of insulin deficiency.	2
		Growth hormone: structure, synthesis, secretion and metabolism. Physiological and metabolic actions of GH. Disturbances in GH production.	1
		Physiology of bone. Regulation of calcium and phosphate homeostasis: PTH, vitamin D and calcitonin.	2
		The adrenal glands. Glucocorticoids: structure, synthesis and secretion. Physiological effects of glucocorticoids. Reduced or overproduction of glucocorticoids.	2
ETHOLOGY <i>(TOT. 15 hours)</i>	<i>Generality</i>	Descriptive etology, experimental etology, etologic areas, targets and methods in etology	1
	<i>Stimulus</i>	Causing mechanisms, key-stimuli, arousing signals, interspecific arousing signals, hypernormal arousing signals, addition of stimuli, filtration, fluctuations of the reaction threshold, specific weariness.	3
	<i>Motivations</i>	Features of the finalistic behaviour, motivation models, evaluation of the intensity of the motivation, motivation analyses, motivation systems, physiologic bases of motivations, hormones and motivation, impulses.	3
	<i>Behavior</i>	Development of behaviour, maturation of behavioural patterns, instinct, learning and memory, temporal and hierarchic organisation of behaviour, coordination of behavioural patterns, spontaneous components in behaviour, conflictual behaviour, schemes of hierarchy of instincts, appetitive behaviour and consuming action, quiescence phase, domestication, features caused by domestication, causes of phenomena connected with domestication	2
	<i>Learning</i>	Classification of learning, biological meaning of the acquired information, learning phases, learning processes.	3
	<i>Behavior and Wellbeing</i>	Definitions, evaluation of welfare, welfare indicators.	3

Practical activities

<p><i>Practical activities (4 hours)</i></p>	<p><i>Behavior</i></p>	<p>Observation methods and recording of behaviors in animals. Behavioral observations of species of veterinary interest with particular reference to dogs, cats, cattle and horses. Practical aspects of management according to the ethology of the animal in relation to its well-being. The exercises are carried out "in the field".</p>	<p>4</p>
--	------------------------	--	----------