Course: Clinical molecular biology (2 CFU; 22 hours: 16 frontal and 6 [x4] practical)			
At the end of this course the students acquire basic knowledge of animal genomics and proteomics and develop familiarity for laboratory techniques applied to the dog genome and the serum proteome.			
Frontal lectures			
Topics and acquired skills	**Subjects**	**Specific content**	**hs**
Opening lecture		Genomics, proteomics. Nuclear and mitochondrial genomes	**1**
1. GENOMICS (TOT. 10 HOURS) *Acquisition of:* *a) specific "omics" language;* *b) basic knowledge of nucleic acid techniques;* *c) basic knowledge of the architecture of dog genome and the molecular basis of inherited disorders*	***Nucleic acid techniques***	Nucleic acid extraction, Purification and electrophoretic separation	**2**
		PCR	**1**
	Exploring dog genome		
		The dog genome	**2**
		Mutations and molecular basis of dog breed diversity	**2**
		Molecular basis of canine inherited disorders (pyruvate kinase deficiency, Cu toxicosis and von Willebrandt disease)	**3**
2. POTEOMICS (TOT. 5 HOURS) *Acquisition of:* *a) basic knowledge of electrophoretic proteome separation;* *b) application of electrophoresis to serum proteome*	***Techniques for proteome separation***	1D AGE and SDS-PAGE Protein electrophoresis, including automated techniques	**2**
	Serum proteome characterization and separation	Significance and role of the most important plasma proteins. Electrophoretic separation of serum proteome (dog, cat, horse and non-conventional animals).	**3**
Practical work			
Topics and acquired skills	**Subjects**	**Specific content**	**hs**

3. PERFORM AND CRITICALLY EVALUATE (TOT. 6 HOURS) *Acquisition of:* *a) correctly perform an experimental protocol;* *b) correctly use of clinical laboratory instruments;* *c) critical skill regarding laboratory results*	***Determination of enzyme activity***	Determination of LDH enzyme activity	2
	Nucleic acid analysis	DNA restriction and electrophoresis	2
	Virtual laboratory	Clinical application of PCR and microarray	2