

# IMMUNOLOGY (IIIrd YEAR )

No. of credits - 3

## Subject structure (weekly assigned hours)

Semester	Lecture	Seminar	Practical session	Project
V	2	—	2	—

## Subject status

Compulsory

## Person in charge

Lecturer Cristina – Elena HORHOGEA, DVM, PhD

## Subject objectives (lectures and applications)

1. Knowledge of the main functions of the immune system components: molecules, cells, tissues and lymphoid organs - how immune system works
2. Mechanisms of primary and acquired immune deficiencies and immune mediated diseases (autoimmune disorders and hypersensitivity reactions);
3. Principles of immune prophylaxis, vaccine and serum types, immune therapy;
4. Conduct of immunological diagnosis: to apply the main antigen – antibody type reactions for the diagnostic and for the assessment of molecules and cells in natural and acquired immunity.

## Subject content (syllabus)

Lectures	Hrs
L1. Introduction in Immunology: subject and history	1
L1. Different aspects of immunity: definition, types, general elements of the immune system	1
L2. Primary and secondary lymphoid organs	2
L3. Natural or essential immunity: definition, classification, characteristics, natural barriers, humoral and cellular factors, mechanisms (inflammation, phagocytosis, etc.)	2
L4. Antigens: molecular structure, classification and antigenicity conditions	2
L5. Acquired immunity: definition, classification, characteristics, maternal-fetal immunity	2
L6. Humoral factors of acquired immunity: immunoglobulins (structure, types, biosynthesis, catabolism), monoclonal antibodies, cytokines	2
L7. Cellular immune effectors: lymphocyte types, antigen presenting cells, etc.	2
L8. Immune response: types, phases, genetic regulation	2
L9. Specific immunity against bacteria, viruses, parasites, mycetes, tumors, transplant	2
L10. Local immunity: digestive, respiratory, urogenital, mammary gland and skin	2
L11. Tolerance and autoimmunity. Systemic and organ specific autoimmune diseases	2
L12. Primary and secondary immunodeficiency syndromes	2
L13. Hypersensitivity reactions or allergy types	2
L14. Immune prophylaxis and immune therapy: vaccines, serums, immunoadjuvant and immunomodulators	2

Practical sessions	Hrs
Lab. 1. Immunology lab presentation, safety work protection. Collection, preservation, shipment and preparation of samples for serological examination	2
Lab. 2. Generalities regarding antigen – antibody reactions	2
Lab. 3. Agglutination reactions	2
Lab. 4-5. Precipitation reaction in liquid and solid medium (immunodiffusion, immunoelectrophoresis)	4
Lab. 6. Haemagglutination and haemagglutination inhibition reaction	2
Lab. 7. Neutralization reaction and complement fixation test	2
Lab. 8. Serological reactions with labeled antibodies: Immunofluorescence reactions (direct, indirect, sandwich)	2
La. 9. Serological reactions with labeled antibodies: ELISA / EIA (direct, indirect, sandwich, competition methods), lateral flow immunoassay	2
Lab. 10. Serological reactions with labeled antibodies: Immunohistochemistry, immuncytochemistry and immunoblot	2
Lab. 11. Cellular immunity evaluation methods: separation, identification and quantification of immunocompetent cells (flow cytometry)	2
Lab. 12. Immunological reactions used in autoimmune diseases (ANA, RF, CRP, ASLO, Coombs) and hypersensitivity reactions	2
Lab. 13-14. Immunological reactions used for the diagnostic of various diseases	4

### Bibliography

1. Immunology lectures – Power Point presentation
2. Tizard R. Ian – Veterinary Immunology, 2008, 2012
3. Immunology practicals – Power Point Presentation
4. Horhoge Cristina – Immunology practicals
5. Brian Markey - Clinical Veterinary Microbiology, 2013

### Subject content knowledge (Final evaluation)

Evaluation type	Evaluation methods	Percentage from final
Exam	Written test (MCQ test) and oral examination	70
Individual activity during the semester	Evaluation during the semester, written and orally	20
Individual Project	Power point presentation	10

### Contact person

#### Lecturer Cristina-Elena HORHOGEA, DVM, PhD

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