Course (TY02003**): (**HISTOLOGY**)**

1. General information

- Term: 03
- Credits: 2 **(Theory: 1.5 - Practice: 0.5 - Self-study: 6.0)**
- Credit hours for teaching and learning activities:
  + Lecture: 22 hrs
  + Presentation and Discussion: 8 hrs
- Self-study: 90 hrs (under the teacher's instruction)
- Department conducting the course:
  - Department: Veterinary Anatomy – Histology
  - Faculty: Veterinary Medicine
- Kind of the course:

Foundation □		Fundamental □		Professional □	
Compulsory □	Elective □	Compulsory x	Elective □	Compulsory □	Elective □

- Parallel course(s): TY02001 Veterninary Anatomy 1
- Prerequisite course(s): None
- Course language: English ☐ Vietnamese x

2. Course objectives and expected learning outcomes

**** Course objectives*:**

- The module aims to provide students with knowledge about the microscopic and ultra-microscopic structure of cells; the microstructure and function of the main tissues constituting the animal body (epithelium, connective tissue, muscle tissue, and nervous tissue); and the contents of histological specimens of some microstructures of cells and basic tissues.

-The course trains students in the skills of taking samples, making animal histological specimens, and proficiently using microscopes and other laboratory machines.

- The module forms students' awareness of the subject Histology I, which is an important basic subject in the livestock industry; has a love for animals; and is careful, meticulous, and serious in the process of making histological specimens.

**** Course expected learning outcomes***

Notation	**Course expected learning outcomes** After successfully completing this course, students are able to	Program learning outcome's performance criteria
Knowledge		
CLO1	Clearly explaining the microscopic structures of cells and basic tissues of animals. CLO1's evaluation criteria: - Clearly explain the microstructure, microscopic and function of cells, basic tissues of animals. CLO1's ssessment method: Final exam CLO's rubric evaluation: Final exam	3.2
Skills		

CLO2	Explaining the relationship between structure and function of tissues according to each organ system of the body; the fundamental role of the module with other modules in the training program in order to contributing to the diagnosis and treatment of animal diseases. CLO2's evaluation criteria: Applying critical thinking in the study of microstructural changes of histocytes in the diagnosis and treatment of diseases. CLO2's assessment method: Practical exam CLO2's rubric assessment: Practice exam	5.4
CLO3	Correctly using of certain routine equipment in the animal histology laboratory CLO3's evaluation criteria: ` - Exact sampling techniques - Be proficient in microscopic specimens, - Observe and analyze microscopic specimens to diagnose animal diseases. CLO3's assessment method: Practical exam CLO3's rubric evaluation: Practice exam	8.2
CLO4	Performing accurately sampling techniques and animal histological specimen-making procedures; observing, reading, and analyzing the contents of the specimen under the microscope. CLO4's evaluation criteria: - Proficient in the use of microscopic slide production machines - Proficient in using microscopes to observe and analyze microscopic specimens to diagnose animal diseases. CLO4's assessment method: Practical exam CLO4's rubric evaluation: Practice exam	10.2
CLO5	Apply research result of scientific research on the microscopic and microscopic structure histological to diagnose diseases. CLO5 evaluation criteria: - Apply the results of scientific research on the microscopic and microscopic structure of blood components to diagnose diseases. CLO5's assessment method: Practical exam CLO5's rubric evaluation: Practice exam	11.4
Self-reliance and responsibility		
CLO6	Show love for animals CLO6's evaluation criteria: Cause no pain to the animal during sampling CLO6's assessment method: Practical exam CLO6's rubric assessements: Attendance and Practice Exam	13.2

3. Course description

TY02003. Veterinary Histology 1 (2C: 1.5-0.5-6). ***Content***: The following topics are included in the course: The concept and microscopic structure of Cytology, Epithelium, Connective tissues, Muscle tissue, and Nerve tissue. ***Teaching method*:** Along with attending the class, students should develop independent study skills, document self-reference skills, and information-sharing skills with peers. ***Assessment method*:** Attendance: 10%, Midterm: 30%, Exam: 60%.

4. Teaching and learning & assessment methods

Table 1: Matrix of Teaching methods and CELOs

CLOs / Teaching methods	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Lecturing	x					
Practicing	x	x	x	x	x	x
E-learning and MS Teams	x					

Table 2. Matrix of Assessment methods and CELOs

Expected learning outcomes	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	**Week**
Formative assessment (40%)							
Rubric 1. Attendance (10%)						x	Week 1-8
Rubric 2. Practicing and Discussing (30%)	x	x	x	x	x	x	Week 1-8
Summative assessment (60%)							
Rubric 3. Final examination (60%)	x						According to the exam schedule planned by VNUA

5. Student tasks

- Attendance: All students attending this course must attend the class for the prescribed number of hours.
- Prepare for the lecture: Students must read the selected content in advance from 34 modules of the lecture series Histology 1.
- Practice: Students must attend all practical content.
- Final Exam: Students must take the final exam according to the schedule of the Training Management Board in the form of an essay exam after completing the above contents.

6. Text books and references

**** Text Books/Lecture Notes:***

1. Viet, D.D, Tam, T.T.D., Son, H.M, Diep, N.V, Trang, P.H.T (2012). Lectures on Histology I.

2. Textbook "Histology Studies - Embryology" (1980) Nguyen Xuan Hoat, Pham Duc Lo. Hanoi University and Professional High School Publishing House.

3. Dellmann's Text book of Veterinary Histology (2016). Jo Ann Eurell, Brian L. Frappier. 6th edition. Blackwell Publishing.

**** Additional references:***

1. References: Textbook of Cattle Anatomy, Cattle Physiology, Animal Biochemistry.
2. Histology and Cell Biology an introduction to Pathology (2019). Abraham L. Kierszenbaum, MD, PhD - Mosby.
3. Illustrated documents, images, movies exploited on the internet.

7. Course outline

Week	Content	CLO criteria to be met
1	***The first lesson and Chaper 1: Cytology (6 hours)***	CLO1, CLO2, CLO3, CLO4, CLO5, CLO6
	A/* Main contents: (3 hours)* **Theory** *(*3 hours*)*: **Theoretical educating content**: Introduction to the subject, Definition of cells, and Cells' research's methods **Practical content:** Sampling method for making animal histological specimens. Methods of animal histology (fixation, block casting, specimen cutting, histological staining)	
	***B/* Self-study at home**: *(18* hours*)* Cells and methods of studying them	CLO1, CLO6
2	***Chapter 1: Cytology (continuing)***	CLO1, CLO2,
	A/* Main contents: (3 hours)* **Content of theoretical education**: ultramicrostructure and function of animal cells	
	***B/* Self-study at home**: *(9* hours*)* Ultramicrostructure and function of animal cells	CLO1, CLO6
3	***Chapter 2: Epithelium (4 hours)***	CLO1, CLO2, CLO3, CLO4, CLO5, CLO6
	***A/* Main contents:** *(*3 hours*)* **Content of theoretical education**: concept of tissue, structure, and physiological function of the epithelium **Practical content:** How to read and analyze the contents of animal histological specimens corresponding to the epithelium.	
	***B/* Self-study at home**: *(12* hours*)* Concept of tissue, structure, and physiological function of the epithelium in the body	CLO1, CLO6
4	***Chapter 3: Connective Tissue (4 hours)***	CLO1
	***A/* Main contents:** *(*3 hours*)*	

	Contents of theoretical education: General characteristics and classification of connective tissue of various types, Loose connective tissue	
	***B/* Self-study at home**: *(12* hours*)* Loose connective tissue	CLO1, CLO6
5	***Chapter 3: Connective Tissue (Continuing) (4 hours)***	CLO1, CLO2, CLO3, CLO4, CLO5, CLO6
	Content of theoretical education: Cartilage tissue, Bone tissue **Practical content:** How to read and analyze the contents of animal histological specimens corresponding to cartilage and bone tissue.	
	***B/* Self-study at home**: *(12* hours*)* Cartilage and bone tissue	CLO1, CLO6
6	***Chapter 4: Blood, Muscle tissue (4 hours)***	CLO1, CLO2, CLO3, CLO4, CLO5, CLO6
	***A/* Main contents:** *(3* hours*)* **Content of theoretical education:** Blood, Skeletal muscle, Smooth muscle, Cardiac muscle **Practical content:** How to read and analyze the contents of animal histological specimens corresponding to muscle tissue.	
	***B/* Self-study at home**: *(12* hours*)* Blood, Muscle tissue.	CLO1, CLO6
7	***Chapter 5: Nerve tissue (4 hours)***	CLO1, CLO2, CLO3, CLO4, CLO5, CLO6
	***A/* Main contents:** *(3* hours*)* **Content of theoretical education:** Formal nerve cell (Neuron), Neuroglia **Practical content:** How to read and analyze the contents of animal histological specimens corresponding to neural tissue.	
	***B/* Self-study at home**: *(6* hours*)* Nerve tissue	CLO1, CLO6