OUTCOMES BASED LEARNING MATRIX

Course: BIOL 206 Vertebrate Anatomy and Physiology II **Department:** Biology

Course Description: This is the second part of an introductory course sequence in the comparative anatomy and physiology of vertebrates, with a focus on domestic animals. Students will use anatomical models and preserved specimens of a variety of species, to study gross and microscopic anatomy of the endocrine, cardiovascular, respiratory, digestive, urinary, and reproductive systems. Emphasis is placed upon the normal anatomy and physiology to provide sufficient knowledge of normal physiologic processes to understand the responses to drugs and disease processes discussed later in the veterinary science curriculum. **Dissection is required**. **Restricted to Veterinary Technician students or by permission of the department.**

Prerequisites: Grade of "C-" or better in Vertebrate Anatomy and Physiology I (BIOL20X),, and Preparing for College Reading II (ENGL092), Introductory Writing (ENGL099), and Fundamentals of Mathematics (MATH010) or waiver by placement testing results or Departmental Approval. Vertebrate Anatomy and Physiology I (BIOL20X) must be taken before Vertebrate Anatomy and Physiology II (BIOL20Y).

The individual outcomes listed in the first column answer the question: **What must the learner know and be able to do at the end of the course?** Items in the third column should answer the question: **How do we know?** The second column is where teachers can be most creative; it's for pedagogy. Each rectangle in column one contains just one outcome; the corresponding rectangles in columns two and three, however, may contain more than one item.

The code indicates the core competencies being strengthened by the outcomes activities and the assessment tools.
Critical Thinking (CT); technology skills (TS); oral communications (OC); quantitative skills (QS); reading (R); writing (W).

COURSE OUTCOMES	OUTCOMES ACTIVITIES	ASSESSMENT TOOLS
Describe the anatomy and physiology of the endocrine system in order to correctly reference or communicate structures and/or functions regarding patients to others. To this end, students must be able to: a) Describe how a hormone causes a physiological change within its target cell. b) Relate the following hormones of the endocrine system to their target tissues and physiological effects: Antidiuretic Hormone, Growth Hormone, Adrenocorticotropic Hormone, Thyroid Stimulating Hormone, Thyroxine/Triiodothyronine, Parathyroid Hormone, Mineralocorticoids, Glucocorticoids, Catecholamines, Insulin, Glucagon, Testosterone, Estrogen, Progesterone, Oxytocin, Melatonin.	• Read text (CT,R) • Attend lecture/discussion (W,OC,CT) • Do study guide (R,W,CT) • Make flashcards (R,W)	• Quizzes and exams (CT,R,W) • Lab practical exams(CT,R,W) • Lab reports (CT,R,W,QS) • Short Essay on Secretion and Effects of a Specific Hormone Within a Specific Animal (CT, R, W, TS)
Describe the anatomy and physiology of the cardiovascular and lymphatic systems and explain the mechanics of circulation and the pathways of transport in order to be able to recognize and communicate both normal and pathological conditions in patients to others. To this end, students must be able to: a) Describe the heart by its shape, size, covering, structure, and function of each chamber. b) Trace the blood through the vessels and in and out of the heart. c) Compare the vessels of the circulatory system: Arteries, Veins, Capillaries, Lymphatic vessels d) Describe the aorta and its branches. e) Describe the different circulatory systems of the body. f) Explain how the circulatory system, lymphatic system, and respiratory system interrelate.	• Read text (CT,R) • Attend lecture/discussion (W,OC,CT) • Do study guide (R,W,CT) • Dissection of selected organs and a major dissection animal (R, CT) • Comparison of figures and models of circulatory system in both lecture and lab (R, OC, CT) • Demonstrations using lab microscope and monitor (TS,OC) • View slides of blood of different animals, cardiac muscle, blood vessels, etc. in lab (TS) • Drawings of histology slides (R,W,TS)	• Quizzes and exams (CT,R,W) • Lab practical exams(CT,R,W) • Lab reports (CT,R,W,QS) • Histology Journal (CT, R, W) • Short Essay on Specific disease of Cardiovascular System in a Specific Animal (CT, R, W, TS)

g) Describe a cardiac cycle. h) Explain where and how a pacemaker works. i) Explain the condition of shock.		
Explain mechanics of the respiratory system, the pathways of transport, and physiology in order to be able to recognize and communicate both normal and pathological conditions in patients to others. To this end, students must be able to: a) Distinguish between the different lobes of the lungs. b) Describe the actions of the alveoli. c) Trace air from the external environment to the erythrocytes. d) List different respiration rates of the: Dog, Cat, Cow, Chicken, Horse	• Read text (CT,R) • Attend lecture/discussion (W,OC,CT) • Do study guide (R,W,CT) • Dissection of selected organs and a major dissection animal (R, CT) • Demonstrations using lab microscope and monitor (TS,OC) • View slides in lab (TS) • Drawings of histology slides (R,W,TS) • Comparison of figures and models in both lecture and lab (R, OC, CT)	• Quizzes and exams (CT,R,W) • Lab practical exams(CT,R,W) • Lab reports (CT,R,W,QS) • Histology Journal (CT, R, W) • Article Summary Regarding Respiratory Physiology in a Specific Animal (CT, R, W, TS)
Explain the process, function, pathway, and accessory organs of the digestive system in order to be able to recognize and communicate both normal and pathological conditions in patients to others. To this end, students must be able to: a) Describe the anatomy of the teeth. b) Trace food completely through the digestive system. c) Explain the relationship between the pharynx and mouth to larynx and esophagus during normal respiration and swallowing. d) Distinguish between different digestive processes in each area of the digestive tract. e) Explain enzymes that act on food. f) Describe how food is absorbed and used by the body. g) Explain the relationship between the circulatory, lymphatic, and digestive systems. h) List accessory glands of the digestive system.	• Read text (CT,R) • Attend lecture/discussion (W,OC,CT) • Do study guide (R,W,CT) • Dissection of a major dissection animal (R, CT) • Demonstrations using lab microscope and monitor (TS,OC) • View slides in lab (TS) • Drawings of histology slides (R,W,TS) • Comparison of figures and models in both lecture and lab (R, OC, CT) • Posters/oral presentations on dietary requirements/restrictions (R,W,CT,OC,TS)	• Quizzes and exams (CT,R,W) • Lab practical exams(CT,R,W) • Lab reports (CT,R,W,QS) • Histology Journal (CT, R, W) • Poster/Presentation Regarding Dietary Needs and Restrictions of a Specific Animal (CT, R, W, OC, TS)

Explain the urinary system in order to be able to recognize and communicate both normal and pathological conditions in patients to others. To this end, students must be able to: a) Describe the structure of the: Kidneys, Ureters, Bladder, Urethra b) Describe the microscopic structure of a nephron. c) Describe the process of urine formation, including the processes of filtration, reabsorption, and secretion. d) Explain the process of micturition. e) Distinguish between alkalosis and acidosis.	• Read text (CT,R) • Attend lecture/discussion (W,OC,CT) • Do study guide (R,W,CT) • Dissection of selected organs and a major dissection animal (R, CT) • Demonstrations using lab microscope and monitor (TS,OC) • View slides in lab (TS) • Drawings of histology slides (R,W,TS) • Comparison of figures and models in both lecture and lab (R, OC, CT)	• Quizzes and exams (CT,R,W) • Lab practical exams(CT,R,W) • Lab reports (CT,R,W,QS) • Histology Journal (CT, R, W) • Article Summary Regarding Urinary Physiology in a Specific Animal (CT, R, W, TS)
Explain the male reproductive system in order to be able to recognize and communicate both normal and pathological conditions in patients to others. To this end, students must be able to: a) Describe testis, epididymis, scrotum, penis, and the blood supply to the male reproductive system. b) Explain the secondary sex characteristics of the male. c) Describe the accessory sex glands and their effect on the body. d) Explain the movement of the sperm and fertilization.	• Read text (CT,R) • Attend lecture/discussion (W,OC,CT) • Do study guide (R,W,CT) • Dissection of a major dissection animal (R, CT) • Demonstrations using lab microscope and monitor (TS,OC) • View slides in lab (TS) • Drawings of histology slides (R,W,TS) • Comparison of figures and models in both lecture and lab (R, OC, CT)	• Quizzes and exams (CT,R,W) • Lab practical exams(CT,R,W) • Lab reports (CT,R,W,QS) • Histology Journal (CT, R, W) • Essay Regarding Courtship/Breeding Behavior in a Specific Animal (CT, R, W, TS)
Explain the female reproductive system in order to be able to recognize and communicate both normal and pathological conditions in patients to others. To this end, students must be able to: a) Describe the female anatomy. b) Explain the secondary sex characteristics of the female. c) Explain ovulation and estrous cycle. d) Explain the functions of the hormones of the female reproductive system.	• Read text (CT,R) • Attend lecture/discussion (W,OC,CT) • Do study guide (R,W,CT) • Dissection of a major dissection animal (R, CT) • Demonstrations using lab microscope and monitor (TS,OC) • View slides in lab (TS) • Drawings of histology slides (R,W,TS)	• Quizzes and exams (CT,R,W) • Lab practical exams(CT,R,W) • Lab reports (CT,R,W,QS) • Histology Journal (CT, R, W) • Essay on Reproductive Cycle in a Specific Animal (CT, R, W, TS)

e) Describe the anatomy and physiology of pregnancy, parturition, mammary glands, and lactation. f) Explain the physiology of pregnancy and parturition in domestic animals. g) Describe the anatomy of the mammary gland. h) Explain the physiology of lactation.	• Comparison of figures and models in both lecture and lab (R, OC, CT)	
To strengthen Core Competencies in order to increase success in this and other courses and in the workplace.	Referenced above	Referenced above.