OUTCOMES BASED LEARNING MATRIX

Course: BIOL 205 Vertebrate Anatomy and Physiology I **Department:** Biology

Course Description: This is the first 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 integumentary, skeletal, muscular and nervous 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 Biological Principles I (BIOL121) or successful performance on departmental challenge exam, 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
Explain anatomy and physiology, cell structure, and cell physiology in order to correctly reference or communicate structures and/or functions regarding patients to others. To this end, students must be able to: a) Define anatomy and physiology. b) Define the following terms: dissection, gross anatomy, and microscopy. c) Explain the importance of anatomy and physiology in veterinarian practice.	• Read text (CT,R) • Attend lecture/discussion (W,OC,CT) • Do study guide (R,W,CT) • Make flashcards (R,W) • Concept maps (CT,R,W) • Dichotomous keys (CT,R,W) • Demonstrations using lab microscope and monitor (TS,OC)	• Quizzes and exams (CT,R,W) • Lab practical exams(CT,R,W) • Lab reports (CT,R,W,QS) • Concept maps (CT,R,W) • Dichotomous keys(CT,R,W) • Histology Journal (CT, R, W)

d) Explain the different systems and major structures of the cat. e) Explain references concerning planes. f) Differentiate between the following descriptive terms: Cranial, Caudal, Dorsal, Ventral, Medial, Lateral, Deep, Superficial, Palmar, Plantar, Prone, Supine g) Differentiate between proximal and distal in relation to structures. h) Discuss the general plane of the body including cavities and regions. i) Explain the cavities of the body and the structures associated with each. j) Explain each region of the body. k) Explain paired and unpaired structures. l) Explain the four primary types of tissue in the body. m) Explain homeostasis of the body.	• View slides in lab (TS) • Drawings of tissue types (R,W,TS)	
Explain the components and physiology of the integumentary 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) Identify the typical mammalian and avian components of the integument	• Read text (CT,R) • Attend lecture/discussion (W,OC,CT) • Do study guide (R,W,CT) • Demonstrations using lab microscope and monitor (TS,OC) • View slides of skin, hair, feathers, etc. in lab (TS) • Drawings of histology slides (R,W,TS) • Comparison of figures of skin 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) • Short Essay Comparing and Contrasting Mammalian Skin and Avian Skin (CT, R, W, TS)

Explain the components and physiology of the skeletal system and its articulations 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) Identify the bones of the mammalian and avian body. b) Describe the composition of a long bone. c) Describe a Haversian canal. d) Explain the relationship of Osteocytes, Osteoblast, Osteoclast, Periosteum, and Endosteum e) Distinguish between different types of fractures. f) Describe the healing forces of bones. g) List different functions of bone. h) Classify bones. i) Explain the following pathological conditions as they relate to the skeleton: Tuberculosis, Osteomyelitis, Osteoma, Chondroma, Rickets, Osteomalacia, and Achondroplasia. j) Classify a joint as to Sutures, Gomphosis, Symphyses, or Diarthrodial. k) Describe the function and the structure of the synovial joints. l) Describe the movements of a synovial joint. m) Explain the pathological disorder of joints.	• Read text (CT,R) • Attend lecture/discussion (W,OC,CT) • Do study guide (R,W,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) • Comparison of skulls, skeletons, and select bones from a pigeon and a variety of mammals (R, OC, CT) • Detailed dissection and examination of select joints in lab (R, OC, CT) • Posters/oral presentations on skeletal pathology (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) • Oral/Poster presentations and/or projects (CT,R,OC,W, TS) • Short Essay Comparing and Contrasting Mammalian Skeleton and Avian Skeleton (CT, R, W, TS)

Explain the components and physiology of the muscular 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 three types of muscle by action, placement, anatomy, and physiology. b) Explain muscle attachments. c) Identify the major muscles of a typical mammal and avian. d) Distinguish between different functional groups of muscles: pectoral, cutaneous, abdominal, pelvic, forelimbs, and hind limbs. e) Explain the actions of muscles during respiration. f) Compare the structure of the smooth, cardiac, and skeletal muscles. g) Define: Motor unit, Neurotransmitters, Hypertrophy, Synaptic cleft h) Describe a muscle contraction. i) Describe factors that influence muscle contractions. j) Describe the effects of medications as related to muscles.	• Read text (CT,R) • Attend lecture/discussion (W,OC,CT) • Do study guide (R,W,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) • Dissection of a major dissection animal (R, CT) • Presentations constructing select muscles on skeletons, describing origin, insertion, action, and innervations (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 Effects of Specific Medications on Muscle Physiology (CT, R, W, TS)

Describe the anatomy and physiology of the nervous system and its interrelationship with the entire body 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 basic origination of the nervous system including: Neuron, Brain, Spinal cord, Nerves b) Identify the parts of the central and peripheral nervous system in a drawing and on a typical mammal and avian. c) Distinguish functional differences between the cerebellum, cerebrum, brain stem, and spinal cord. d) List the different meninges. e) Recognize the major cranial and spinal nerves. f) Distinguish between the sympathetic and the parasympathetic nervous system. g) Describe a nerve impulse. h) Explain a reflex. i) List ways the autonomic nervous system can maintain a relatively stable internal body environment. j) Describe effects of anesthetics as related to the nervous system.	• Read text (CT,R) • Attend lecture/discussion (W,OC,CT) • Do study guide (R,W,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) • Dissection of selected organs and a major dissection animal (R, CT)	• Quizzes and exams (CT,R,W) • Lab practical exams(CT,R,W) • Lab reports (CT,R,W,QS) • Short Essay Comparing and Contrasting Mammalian CNS and Avian CNS (CT, R, W, TS) • Article Summary Regarding Effects of Specific Anesthesia on Neurophysiology (CT, R, W, TS)
To strengthen Core Competencies in order to increase success in this and other courses and in the workplace.	Referenced above	Referenced above.