

JEFFERSON COLLEGE

COURSE SYLLABUS

BIO208

VERTEBRATE PHYSIOLOGY

4 Credit Hours

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**Revised Date: November 2005
by
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**Arts and Science Education
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BIO208 VERTEBRATE PHYSIOLOGY

I. CATALOGUE DESCRIPTION

Prerequisite: BIO207
4 semester hours credit

Vertebrate Physiology is the study of function associated with vertebrate organs, organ systems and integration of these systems for maintaining life. Vertebrate physiology involves three hours of lecture and 1 hour 40 minutes of laboratory per week. (S)

II. GENERAL COURSE OBJECTIVES

Upon completion of this course the student will be able to:

- A. Use basic anatomical vocabulary from the prerequisite course to describe how vertebrate organs and organ systems function.
- B. Demonstrate an awareness of how the organ systems of various animals are integrated.
- C. Understand the basic role of vertebrate organs and systems for maintaining proper function in vertebrate animals.
- D. Understand basic clinical physiology procedures associated with muscle contraction, sensory testing, blood analysis, urinalysis, metabolism, blood pressure and electrocardiology.
- E. Explain the general functions of each primary organ system.
- F. Have a basic understanding of how the primary organs work.
- G. Demonstrate that the function of organs among representative members of vertebrate groups may be different due to variations in structure.

III. COURSE OUTLINE (COURSE CONTENT WILL BE DRAWN FROM THIS)

- A. Physiology of Cells
- B. Physiology of Bones
- C. Physiology of Muscles
- D. Physiology of Blood
- E. Physiology of the Heart

- F. Physiology of Respiration
- G. Physiology of Endocrine Glands
- H. Physiology of the Kidney
- I. Physiology of Digestion
- J. Physiology of the Nervous System
- K. Physiology of Reproduction

IV. UNIT OBJECTIVES

- A. Physiology of Cells
 1. Understand membrane function associated with osmosis, facilitated diffusion and active transport.
 2. Be able to predict the result of vertebrate cells placed in different tonic solutions.
 3. Describe the function of major organelles.
- B. Physiology of Bones
 1. Know the basic manner by which bones ossify.
 2. Describe fractures and the process of fracture healing.
 3. List and explain basic pathology of bones.
- C. Physiology of Muscles
 1. Know the primary functions of the three muscle types.
 2. Characterize the process of contraction.
 3. Identify and explain patterns of myography.
- D. Physiology of Blood
 1. Characterize primary physiology of red and white blood cells.
 2. Associate differences among representative vertebrates.
 3. Characterize the content of plasma.
 4. Understand the process of coagulation.
- E. Physiology of the Heart
 1. Compare the fish, frog and mammalian heart.
 2. Understand the primary events of the cardiac cycle.
 3. Demonstrate blood pressures and volumes.
- F. Physiology of Respiration

1. Demonstrate the mechanism of breathing.
2. Identify the types of breathing.
3. Describe volumes and capacities.
4. Give examples of how gas laws effect the physiology of respiration.
5. Characterize the blood gas.

G. Physiology of Endocrine Glands

1. Describe the role of the hypophysis and hypothalamus in homeostasis.
2. List the major glands and explain their hormonal functions.
3. Characterize the mechanisms of hormonal action.

H. Physiology of the Kidney

1. List the primary functions of the kidney.
2. Describe control of renal function by ADH and Aldosterone.
3. Explain renal clearance and glomerular filtration.
4. Associate the role of the kidney for regulation of acid-base and electrolytes.
5. Describe clinical urinalysis.

I. Physiology of Digestion

1. Identify the chemical events of digestion and basic physiology of each digestive organ.
2. Understand the process of absorption.
3. Compare digestive processes among vertebrates
4. Describe reminary digestion.

J. Physiology of the Nervous System

1. Characterize the physiology of cell surface and synapse.
2. Demonstrate the events of action potential.
3. Describe reflexes.
4. Identify primary functions of organs of the CNS.
5. Characterize functions of the ANS.

K. Physiology of Reproduction

1. Explain spermatogenesis and oogenesis.
2. Describe the functions of male and female hormones.
3. Describe the gonadotrophic cycle.
4. Explain basic physiology associated with pregnancy, development and parturition.

V. METHOD(S) OF INSTRUCTION

- A. Lectures
- B. Video Tape and CD-ROM Demonstrations
- C. Class Discussion
- D. Reading Textbook
- E. Laboratory Exercises
- F. Classroom Demonstrations

VI. REQUIRED TEXTBOOK(S) WITH PUBLICATION INFORMATION

Colville, T., and J.M. Bassert, Clinical Anatomy & Physiology for Veterinary Technicians, Mosby, St. Louis

VII. REQUIRED MATERIALS (STUDENT)

Writhing paper, pens

VIII. SUPPLEMENTAL REFERENCES

Vertebrate Physiology Lab Manual-required

IX. METHOD OF EVALUATION (STUDENT)

- A. Written Exams
- B. Laboratory Exercises