**OFFICIAL COURSE OUTLINE INFORMATION**

Students are advised to keep course outlines in personal files for future use.

- Shaded headings are subject to change at the discretion of the department and the material will vary.

### FACULTY/DEPARTMENT:

**Faculty of Science, Health & Human Services/Biology**

<table>
<thead>
<tr>
<th>COURSE NAME/NUMBER</th>
<th>FORMER COURSE NUMBER</th>
<th>UCFV CREDITS</th>
</tr>
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<tbody>
<tr>
<td>Anatomy and Physiology of Vertebrates II</td>
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<td>4</td>
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### CALENDAR DESCRIPTION:

This course is a continuation of the comparative anatomy and physiology of the vertebrates. Organ systems covered in this course include cardiovascular, respiratory, digestive, excretory, reproductive, and lymphatic/immune.

### PREREQUISITES:

- **BIO 305**

### COREQUISITES:

- None

### SYNONYMOUS COURSE(S):

- (a) Replaces: n/a
- (b) Cannot take: n/a for further credit.

### SERVICE COURSE TO:

- None

### TOTAL HOURS PER TERM:

<table>
<thead>
<tr>
<th>STRUCTURE OF HOURS</th>
<th>TRAINING DAY-BASED INSTRUCTION</th>
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<tbody>
<tr>
<td>Lectures: 60 Hrs</td>
<td>HOURS PER DAY:</td>
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<tr>
<td>Seminar:</td>
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<tr>
<td>Laboratory: 45 Hrs</td>
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<tr>
<td>Field Experience:</td>
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<td>Student Directed Learning:</td>
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<tr>
<td>Other (Specify):</td>
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### MAXIMUM ENROLLMENT:

- 36 annually

### EXPECTED FREQUENCY OF COURSE OFFERINGS:

- Will transfer credit be requested? (lower-level courses only)
  - Yes  
  - No

- Will transfer credit be requested? (upper-level requested by department)
  - Yes  
  - No

- Transfer credit exists in BCCAT Transfer Guide:
  - Yes  
  - No

### COURSE IMPLEMENTATION DATE:

- September 1994

### COURSE REVISED IMPLEMENTATION DATE:

- September 2007

### COURSE TO BE REVIEWED:

- October 2010
  - (Four years after UPAC final approval date) (MONTH YEAR)

### AUTHORIZATION SIGNATURES:

- Course Designer(s): Tony Stea
- Chairperson: Gillian Mimmack (Curriculum Committee)
- Department Head: Barbara Moon
- Dean: Jackie Snodgrass

- UPAC Approval in Principle Date:  
- UPAC Final Approval Date: Oct. 27, 2006
LEARNING OBJECTIVES / GOALS / OUTCOMES / LEARNING OUTCOMES:

After successful completion of this course the students should be able to:

1. describe the physiology and anatomy of the circulatory system of vertebrates.
2. explain the different types of gas exchange organs used in vertebrates and how they work.
3. explain how different vertebrates maintain homeostasis while living in diverse environments.
4. describe the physiology of vertebrate kidneys.
5. describe the anatomy and physiology of vertebrate digestive systems.
6. explain the physiological differences between endotherms and ectotherms.
7. describe the reproductive systems in vertebrates.

METHODS:

Lectures, laboratories, small group discussions, audio-visual presentations.

PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

Credit can be awarded for this course through PLAR (Please check:)  ☒ Yes  ☐ No

METHODS OF OBTAINING PLAR:

Course examination: The student must challenge both lecture and lab components of the course by writing an examination for each.

The student will be provided with a copy of the syllabus and information how to obtain a copy of the current text and lab manual.

The student will also be given information about exam style and expected standards.

The student can sit the examination for the lecture portion of the course at a time convenient to both student and instructor.

TEXTBOOKS, REFERENCES, MATERIALS:

[Textbook selection varies by instructor. An example of texts for this course might be:]

Functional Anatomy of the Vertebrates, 3rd Ed.

In-house Lab Manual

LIBRARY RESOURCES:

Books:

The Life of Vertebrates, Young
An Atlas of Histology, Freeman & Bracegirdle
Animal Physiology, Ekert & Randall
The Vertebrate Body, Romer & Parsons
Human Physiology, Guyton
Human Physiology, Vander, Sherman & Luciano

Journals:

Journal of Experimental Biology
Journal of comparative Physiology
Annual Review of Physiology
Physiological Zoology
Environmental Physiology
Canadian Journal of Zoology
SUPPLIES / MATERIALS:

STUDENT EVALUATION:
[An example of student evaluation for this course might be:]

Lecture midterm 20%
Lecture Final 30%
Laboratory 30%
Assignments and Quizzes 10%
Oral Presentations 10%

COURSE CONTENT:
[Course content varies by instructor. An example of course content might be:]

TOPICS WILL INCLUDE:
Integration of Physiological Systems
- review of taxonomy, physiological system overview.

Circulation
- anatomical comparisons, heart rate control, peripheral circulation patterns.

Acid / Base Balance and Gas Exchange
- gas transfer, gills vs lungs, pH in body fluids.

Ionic and Osmotic Control
- osmoregulation in aquatic and terrestrial organisms,
- nephron structure / function.
- ammonotelic, ureotelic, and uricotelic vertebrates.

Digestion and Metabolism
- feeding, alimentary systems, nutritional requirements.

Immunology of Vertebrates
- cells of immune system, lymphatic circulation.

Environmental Aspects of Physiology
- ectothermy, endothermy, body size vs metabolic rate.
- adaptations to extreme environments.

Reproduction of Vertebrates
- reproductive strategies.

Laboratory Experiments:
- Computer simulation of mammalian cardiovascular system
- Computer simulation of the effect of drugs and hormones on heart rate and BP in mammals
- Human EKG lab
- Dissection of dogfish and examination of circulatory, digestive, excretory, and reproductive systems
- Dissection of mudpuppy and examination of circulatory, digestive, excretory, and reproductive systems
- Dissection of cat and examination of circulatory, digestive, excretory, and reproductive systems
- Computer simulation of anatomy and physiology of mammalian kidneys
- Determination of standard metabolic rate in goldfish
- Field trip to Fraser Valley Fish Hatchery

- Oral Presentations on Selected Vertebrate Topics

Supporting Laboratory Equipment:

Basic: Preserved specimens, models.

Special: Chart recorders, EKG apparatus, Oxygen meters, computers.