SYLLABUS

DATE OF LAST REVIEW: 02/2013
CIP CODE: 24.0101
SEMESTER: Departmental Syllabus
COURSE TITLE: Physiology
COURSE NUMBER: BIOL0271
CREDIT HOURS: 3
INSTRUCTOR: Departmental Syllabus
OFFICE LOCATION: Departmental Syllabus
OFFICE HOURS: Departmental Syllabus
TELEPHONE: Departmental Syllabus
EMAIL: Departmental Syllabus

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PREREQUISITES: One of the following courses is required as a prerequisite for this course: CHEM0109, General Chemistry, or CHEM0111, College Chemistry, or BIOL0141 Human Anatomy and Laboratory, or BIOL0143 Human Anatomy & Physiology, or BIOL0121, General Biology.

REQUIRED TEXT AND MATERIALS: Please check with the KCKCC bookstore, http://www.kckccbookstore.com for the required text for your particular class.

COURSE DESCRIPTION: Physiology provides an introduction to the dynamic functions of the human organism from the chemical and molecular mechanisms which sustain cellular processes through the control systems responsible for homeostasis and the influence of these systems on the cellular function of organ and system operation.

METHOD OF INSTRUCTION: A variety of instructional methods may be used depending on content area. These include but are not limited to: lecture, multimedia, cooperative/collaborative learning, labs and demonstrations, projects and presentations, speeches, debates, and panels, conferencing, performances, and learning experiences outside the classroom. Methodology will be selected to best meet student needs.

COURSE OUTLINE:
A. Homeostasis and Cell Activities
   1. Homeostasis
   2. Energy and metabolism
   3. Diffusion and osmosis
   4. Membrane transport

B. The Nervous System
   1. Membrane Potential
   2. Neuron anatomy and physiology
      a. receptors
      b. synapses
      c. potentials
1. action
2. graded
3. Autonomic Nervous System
   a. Parasympathetic division
   b. Sympathetic division
4. Somatic Nervous System
   a. Muscle anatomy and physiology
   b. Reflex arc.

C. The Cardiovascular System
   1. Circulation
   2. ECG
   3. Mechanical events of the heart cycle
   4. Cardiac output and stroke volume
   5. The vascular system
   6. Regulation of systemic pressure
   7. Capillaries

D. The Respiratory System
   1. Anatomy of the respiratory system
   2. Volumes and capacities
   3. Mechanisms
   4. Gas pressures
   5. Control mechanisms

E. The Urinary System
   1. Anatomy of the urinary system
   2. The nephron
   3. Mechanisms of renal functions
   4. pH regulation
   5. Water balance
   6. Control mechanisms

EXPECTED LEARNER OUTCOMES:
A. The learner will be able to demonstrate a broad knowledge of homeostasis.
B. The learner will be able to demonstrate a broad knowledge of cell functions.
C. The learner will be able to demonstrate a broad knowledge of the nervous system.
D. The learner will be able to demonstrate a broad knowledge of the cardiovascular system.
E. The learner will be able to demonstrate a broad knowledge of the respiratory system.
F. The learner will be able to demonstrate a broad knowledge of the renal system.

COURSE COMPETENCIES:
The learner will be able to demonstrate a broad knowledge of homeostasis.
1. The learner will be able to define homeostasis and construct a feedback loop.
2. The learner will be able to compare and contrast positive and negative feedback systems.

The learner will be able to demonstrate a broad knowledge of cell functions.
3. The learner will be able to identify cell structures
4. The learner will be able to compare and contrast structure and/or function of selected organelles.
5. The learner will be able to compare and contrast functions and locations of biochemical pathways for energy production in the cell.
6. The learner will be able to summarize the principles that govern diffusion.
7. The learner will be able to compare and contrast the processes of diffusion and osmosis.
8. The learner will be able to distinguish the various processes of membrane transport and apply to cell function.

The learner will be able to demonstrate a broad knowledge of the nervous system.
9. The learner will be able to explain resting membrane potential, action potentials, hyperpolarization, depolarization, synaptic potentials, and receptor potentials.
10. The learner will be able to explain the processes that establish the various potentials.
11. The learner will be able to identify or illustrate neuron anatomy.
12. The learner will be able to relate the processes of neuron function.
13. The learner will be able to differentiate between the various types of receptors and synapses.
14. The learner will be able to compare and contrast the structure and function of the components of the Autonomic Nervous System.
15. The learner will be able to identify the components of the Somatic Nervous System and explain how it controls muscle function.

The learner will be able to demonstrate a broad knowledge of the cardiovascular system.
16. The learner will be able to identify skeletal muscle structures and relate to function.
17. The learner will be able to diagram the pathway of blood flow.
18. The learner will be able to identify heart structure and relate it to heart function.
19. The learner will be able to identify the components of and ECG and relate to heart function.
20. The learner will be able to compare and contrast various arrhythmias.
21. The learner will be able to describe or explain the mechanical events of the cardiac cycle and relate to heart function and the ECG.
22. The learner will be able to define CO, HR, and SV.
23. The learner will be able to compare and contrast the components of the vascular system and assess their control mechanisms.
24. The learner will be able to diagram the anatomy of microcirculation and relate it to its physiology.

The learner will be able to demonstrate a broad knowledge of the respiratory system.
25. The learner will be able to identify the volumes and capacities of respiration.
26. The learner will be able to explain the mechanisms of the respiratory process.
27. The learner will be able to relate gas pressure to the processes of respiration and to the regulation of respiration.

The learner will be able to demonstrate a broad knowledge of the renal system.
28. The learner will be able to identify renal anatomy and relate to the mechanisms of renal function.
29. The learner will be able to identify the methods of pH regulation in the body.
30. The learner will be able to identify the methods of water balance for the body.
31. The learner will be able to diagram the control mechanisms of kidney function.

ASSESSMENT OF LEARNER OUTCOMES: Student progress is evaluated by means that include, but are not limited to, exams, written assignments, and class participation.

SPECIAL NOTES:
This syllabus is subject to change at the discretion of the instructor. Material included is intended to provide an outline of the course and rules that the instructor will adhere to in evaluating the student’s progress. However, this syllabus is not intended to be a legal contract. Questions regarding the syllabus are welcome any time.

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