

Johnson County Community College
Department of Life Sciences

Human Physiology

COURSE SYLLABUS

<http://staff.jccc.edu/aalarabi>

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Division: Science, Health Care and Math

Department: Life Sciences Course Title: **Human Physiology**

Instructor: **Ateegh Al-Arabi, Ph.D.**

Campus Telephone: 913 469 8500 ext 3389

Office Location: OCB 234

Office Hours: Posted on Office Door & at <http://staff.jccc.net/aalarabi/hours.htm>

Course Number: BIOL 225

Credit Hours: 4

Contact Hours: 6

Lecture Hours: 3 Laboratory Hours: 3

Course Type: Transfer

Course Description

An introduction to the dynamic function 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. Laboratory investigation using selected biochemical and physiological preparations allows correlation of theory with experimental observations.

Prerequisite(s) and/or Co-Requisite(s):

CHEM 122, BIOL 140 or BIOL 146

Required Textbook:

Silverthorn, Dee Unglaub. *Human Physiology An Integrated Approach*. 4th Edition, Benjamin Cummings. San Francisco 2007

Course Rationale:

Human physiology deals with all aspects of functioning in the human being, from the simple diffusion of water molecules to the highly integrated and complex processes of thought and emotion. Human physiology BIOL 225 is both an introductory course in human physiology and a preparatory course for those individuals in or preparing for health professions. This necessitates a practical as well as theoretical approach to function. The course provides a good solid basis for understanding human function and is applicable to nursing, dental hygiene, physical education, respiratory therapy, and pre-dental, pre-medical or pre-pharmacy students, as well as certain other professional and para professional areas.

Course Objectives:

After completing this course the student should be able to:

- Describe the basic components of the cell, their functions and their roles in the operation of the cell.
- Relate the functions of the nervous and endocrine systems to the maintenance of a stable internal environment in the human body.

- Describe the organ composition of each system in the human body and explain the molecular-cellular function of that system's component tissues and organs.
- Demonstrate a knowledge of the body fluid compartments and the importance of maintaining a homeostatic condition in those compartments via various compensatory mechanisms.
- Demonstrate a comprehension of the normal functions and mechanisms of all the major systems of the human body and relate those to some clinical applications in abnormal or pathological conditions.
- Demonstrate an ability to use various physiological equipments and machines correctly and effectively in laboratory exercises, as well as accurately interpreting results obtained from in them.

Course Requirements and Class Participation:

Each student is required to successfully pass examinations covering each study period as well as to participate in and submit completed papers on laboratory exercises. As a general rule, there will be an exam after the completion of every major part of the course. These may contain multiple choice, true - false, short answer- completion or essay questions. They may include information from the textbook. All labs must be completed and turned in or no course credit will be given.

Attendance and Test Make-up Policies:

To do well in scientific disciplines it is essential that you keep homework up to date and do all the labs required and not accumulate work. In addition, tests must be taken on time.

Grading

Your final grade will be determined largely by the ratio of your earned points to the total possible points. The ratio will be expressed as a percentage and the percentage converted to a letter grade, which will appear on your transcript. the letter grades representative of the percentage ranges are shown below. The final grade will be determined by the instructor upon consideration of earned points, attendance and cooperative class/lab participation. Up to 5% of the total final grade will be considered discretionary for the instructor.

- Exams will represent 80% of the final grade
- Labs (10 lab assignments from PhysioEx lab book comes with the textbook) 20%
- Additional extra credit of 5% will be added if all labs are done at home and in class

A = 90 - 100%

B = 80 - 89%

C = 70 - 79%

D = 60 - 69%

F = Below 60%

Rationale:

In order that we measure your progress and ability to grasp the concepts presented in physiology, and help make the instructor's presentation more effective, as many exams as possible, each worth 100 point, will be administered during the semester. Multiple choice, fill in blanks, matching, short answer, and essay questions may be used. Other assignments used in grading may be given to you by your instructor, including quizzes (announced or unannounced), laboratory or other written work.

General Information:

Physiology is the study of the dynamic functions in living organisms. Human physiology deals with all aspects of functioning in the human being from the simple diffusion of a single water molecule through a capillary membrane to the highly organized and integrated sequence of neuronal firings which culminate in thought or emotion. We have divided the study of human physiology into three general areas: cellular physiology, control systems, and organ physiology. Since the cell is the basic functional unit of the body, approximately one third of the course is devoted to cell physiology and the various biochemical reactions necessary to support the cell. After a short review of organic and biochemistry, we investigate transport phenomenon, cell metabolism and energy production, cell replication and protein synthesis and finally, electrical properties of cells. The next one fifth of the course deals with the concept of homeostasis and the two principal control systems which attempt to maintain a stable internal environment. The two systems investigated are the nervous systems and the endocrine system.

The last half of the course is devoted to organ physiology, the systems of the body which inclusive organs are studied and discussed with constant referral to cellular function as the basis of organ and system operation. Certain topics have been omitted due to time factor, but pursuit of individual areas interest is encouraged.

Human Physiology BIOL 225 is a college-level course which requires a minimum of 12-15 hours of concentrated study per week. the course is designed to assist the student in developing concepts of physiological functions, not merely memorization of isolated "facts". It is not a difficult course, but it does demand constant, serious attention.

Concepts take time to develop, so do some physiology each day. Spend the weekends reviewing the entire week's work and extract the important principles set forth in the section objectives. Examination questions will be taken from the stated objectives.

The first one third of the course is critical for comprehension of advanced concepts of neural, renal, pulmonary and cardiovascular functions, which require a thorough understanding of the chemical and molecular events which sustain cellular processes.

Important Dates

- **Assignments/ Topics** – The sequence of assignments and the topics covered are subject to change with notice.
- **Test Dates** – Exam dates will be announced in class at least one week before exam dates
- **FINALS – Given according to College-wide Final Exam Schedule**
- **Withdrawals – 16 week course** (Eight week course)
- **Last day to register or change schedule – January 23, 2008** (*1st two days of class and two working days that follow*)
- **Last day to drop class with 100% refund – January 23, 2008** (*1st day of class and two working days that follow*)
- **Last date to withdraw and not receive a “W” – February 13, 2008** (*Before ¼ of class has been completed*)
- **Last date to withdraw and receive a “W” – April 15, 2008** (*Before ¾ of class has been completed*)
- **Last day to request pass/ fail option – April 15, 2008** (*Before ¾ of class has been completed*)

- **Emergency Assistance and Disaster Plan** – The College **requires** that a copy of the floor plan for the building you are teaching in be included in your syllabus.
Floor Plans - <http://www.jccc.net/home/depts/002220/site/floorplans>

Conduct

- **Student Code of Conduct** – The pages in the *Catalog of College*
<http://www.jccc.net/home/policies/300.00> student personnel toc/319.00 students rights toc/319.01 code of conduct

ADA compliance – “If you are a student with a disability, and if you will be requesting accommodations, it is your responsibility to contact the Student Access Center. The Student Success Center will recommend any appropriate accommodations to your instructor and his/ her Academic Director. The instructor and Academic Director will identify for you which accommodations will be arranged. Students with disability or health-related problems that would require special attention during an emergency evacuation may file an Individualized Evacuation Statement (IES) through the office of Student Access. Assistance in completing the IES can be obtained in Student Access (253 Student Center)”.

Course Competencies – http://www.jccc.net/home/course_outline/default/BIOL225

Tentative Class Schedule

Week	Topic of class Activity
1	Introduction and Cellular Chemistry
2	Cell Structure, Energy and Cellular Metabolism
3	Homeostasis, Membrane Transport, and Membrane Potential
4-5	The Nervous System: Organization, Electrical Activity and Synaptic Transmission
6	Sensory Physiology
7	Muscle: Contraction and Neural Control
8-9	Cardiovascular System
10	The Immune System
11-12	Respiratory Physiology
13	Physiology of the Kidney
14	The Digestive System
15	Reproduction
16	Final Week