

BLINN COLLEGE
MASTER COURSE SYLLABUS

BIOLOGY 2401

CIP # 26.0707.51 03

CIP Area: Life Sciences

Fall, 2005

Prepared by:

Bryan Campus / Date

Confirmed by:

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BIOL 240I Anatomy and Physiology I

This course is in the core curriculum.

Purpose Statement

The purpose of the natural sciences component in the core curriculum is to enable the student to understand the basic concepts in the natural sciences and to apply that understanding to the analysis of current issues in society. Biology 2401 is a study of the structure and function of the human body from the molecular level through the systems level. The course integrates lecture and discussion with laboratory participation to provide students with an understanding of the principles of structure and function of the human body. Emphasis is given to skills and acquisition of knowledge that will be useful to students continuing in related academic or allied health science careers.

Course Description

Biology 2401 – Anatomy and Physiology I

Principles of structure and function of the human body. Anatomy and Physiology I is the first course in a two semester sequence which examines the systems of the human body using an integrated approach. The chemistry of life provides a foundation to investigate the major organ systems of the body. The areas of study include the structure and function of cells, histology, the physiological and anatomical aspects of support and movement systems and the nervous system. Prerequisites: Biology 1406 with a grade of “C” or better or approval of the division chair on the relevant campus. Chemistry 1407 or Chemistry 1411 is recommended. Three class hours and three laboratory hours per week. Credit: Four semester hours.

1. Expanded Course Description

A. Major areas to be covered in lecture are:

- 1) Introduction to Anatomy/Physiology
- 2) The Language of Anatomy
- 3) Chemistry of the Human Body
- 4) Cells
- 5) Tissues
- 6) Integumentary System
- 7) Skeletal System
- 8) Joints and Articulations
- 9) Muscular System
- 10) Nervous System

B. Major areas to be covered in laboratory are:

- 1) Introduction to Anatomy/Physiology
- 2) Microscopy
- 3) Classification of Tissues
- 4) Integumentary System
- 5) Classification of Body Membranes
- 6) Anatomy of the Skeletal System - Axial and Appendicular Skeletons
- 7) Articulations and Body Movements
- 8) Anatomy and Physiology of the Muscular System
- 9) Anatomy and Physiology of the Nervous System

2. Classroom Hours: Three lecture hours and three laboratory hours per week.

3. Credit Hours: Four credit hours.

4. Prerequisites: Biology 1406 or approval of the division chair on the relevant campus. Chemistry 1407 or Chemistry 1411 is recommended.

5. Core Course: This is a Core Course in the 42-hour Core of Blinn College; more can be found at www.blinn.edu/corecurriculum/. As such, students will develop proficiency in the appropriate Intellectual Competencies, Exemplary Educational Objectives, and Perspectives as follows:

A. Intellectual Competencies

- 1) **Reading:** The ability to analyze and interpret a variety of printed materials, books, documents and articles – above the 12th grade level.
- 2) **Writing:** The ability to produce clear, correct and coherent prose adapted to purpose, occasion and audience - above the 12th grade level.
- 3) **Listening:** The ability to analyze and interpret various forms of spoken communication – above 12th grade level.
- 4) **Critical Thinking:** The ability to think and analyze at a critical level.
- 5) **Computer Literacy:** The ability to understand our technological society, use computer-based technology in communications, solving problems, acquiring information.

B. Exemplary Educational Objectives

- 1) Understand and apply method and appropriate technology to the study of natural sciences.
- 2) Recognize scientific and quantitative methods and the differences between these approaches and other methods of inquiry and to communicate findings and analyses.
- 3) Identify and recognize the differences among competing scientific theories.
- 4) Demonstrate knowledge of the major issues and problems facing modern science, including issues that touch upon ethics, values, and public policies.
- 5) Demonstrate knowledge of the interdependence of science and technology and their influence on, and contribution to, modern culture.

C. Perspectives

- 1) Recognize the importance of maintaining health and wellness
- 2) Develop a capacity to use knowledge of science and technology
- 3) Develop personal values for ethical behavior
- 4) Use logical reasoning in problem solving
- 5) Integrate knowledge and understand the interrelationships of the scholarly disciplines

Course Objectives and Student Learning Outcomes

These learning outcomes and course objectives will include the student demonstrating competence in following areas.

Lecture Objectives:

- 1) Explain the principle of complementarity.
- 2) Describe homeostasis and feedback mechanisms.
- 3) Use correct anatomical terms to describe the human body.
- 4) Explain the major molecular structures basic to life.
- 5) Describe the anatomy and physiology of cells.

- 6) Compare the structures and functions of major tissue types.
- 7) Explain integumentary system histology & function, including repair & cancer.
- 8) Demonstrate knowledge of bone physiology, and identify human bones & markings.
- 9) Describe articulation structures and movements.
- 10) Demonstrate knowledge of muscle physiology and identify human muscles.
- 11) Describe neural physiology and components of the central and peripheral nervous systems.
- 12) Communicate effectively an understanding of pertinent biological processes or topics.

Laboratory Objectives:

- 1) Demonstrate familiarity with the fundamentals of laboratory safety.
- 2) Given the appropriate materials and equipment for “wet” lab experiments and simulated multimedia computer programs, the student will perform various lab experiments.
- 3) Using selected organisms, the lab partners or group will systematically dissect and view the appropriate organ systems.
- 4) Identify and discuss major features of tissues using models or slides.
- 5) Identify and discuss bone and the skeletal system using models or slides.
- 6) Identify and discuss joints and articulations using models or slides.
- 7) Identify and discuss muscle and the muscular system using dissected specimens, models or slides.
- 8) Identify and discuss the nervous system using dissected specimens, models, or slides.

Course Requirements

Upon completion of the course, the student will have an overall average of $\geq 60\%$ of the combined lecture and laboratory components of the course. This includes at least 3 major lecture exams and a comprehensive final examination. The student will demonstrate an understanding of the laboratory exercises through analysis of the data and the ability to use the data to solve problems. Laboratory examinations will be designed to address both knowledge and skills.

Grading System

The following areas will be clearly outlined by the instructor in the Course Information Sheet given to the students.

- 1) Major Exams: At least three major exams covering the lecture material evenly distributed throughout the semester. Information from the laboratory experiments may be included on major exams.
- 2) Laboratory Exams: At least two laboratory examinations on knowledge and skills acquired through laboratory activities, covering histological slides, models, dissections, and any other lab work deemed appropriate by the instructor.
- 3) Minor Exams/Quizzes/Homework: Given at the discretion of the instructor.
- 4) Additional Reports or projects: Assigned at the discretion of the instructor.
- 5) Final Exam: Comprehensive exam covering the entire course, counting no less than 15% of the final course grade.

Outcomes Inventory

Biology 2401 will be evaluated through the following methods:

1. A pretest and posttest instrument to determine the extent of student improvement during the semester.
2. Each intellectual competency listed above will be evaluated to measure its attainment:
 - A. **Reading:**
 - 1) Source: Textbook OR Lab book OR Journal articles.
 - 2) Method of Measurement: Exam score (posttest or other test) OR Lab assignment score OR Research paper score OR Written assignment score OR Class participation score OR Other measure such as quiz.
 - B. **Writing:**
 - 1) Source: Journal article review OR Term paper OR Essays on exam
 - 2) Method of Measurement: Lab assignment score OR Research paper score OR Written assignment score OR Exam score (Other than posttest) OR Class participation score OR Other measure score such as quiz.
 - C. **Listening:**
 - 1) Source: Lecture OR video
 - 2) Method of Measurement: Lab assignment score OR Exam score (Other than posttest) OR Class participation score OR Other measure such as quiz.
 - D. **Critical thinking:**
 - 1) Problem solving assessed with Exam score (posttest or other test) OR Lab assignment score OR Research paper score OR Written assignment score OR Class participation score OR Other measure such as quiz.
 - E. **Computer literacy:**
 - 1) Use of Internet / CD-ROM or DVD assessed with Exam score (posttest or other test) OR
 - 2) Lab assignment score OR Research paper score OR Written assignment score OR Class participation score OR Other measure such as quiz.

Calendar

The instructor will ensure that the course content is covered in a manner that fulfills the course objectives. The instructor will also provide Course Information Sheets to the students and the administration. Important details including tentative examination dates and due dates for assignments are provided.

Lecture Topics

1. A&P Terminology, Systems Overview
2. Biological Chemistry
3. Cellular Anatomy & Physiology
4. Histology
5. Integumentary System
6. Bone Physiology
7. Axial & Appendicular Skeleton
8. Joints & Articulations
9. Muscle Physiology
10. Muscular System
11. Nerve Physiology

12. Central Nervous System
13. Somatic Nervous System
14. Autonomic Nervous System

Laboratory Topics

1. A&P Language, Systems Overview
2. Microscopy
3. Cellular Anatomy
4. Histology
5. Integumentary System & Classification of Body Membranes
6. Bone Physiology
7. Axial & Appendicular Skeleton
8. Joints & Articulations
9. Muscle Physiology
10. Muscular System
11. Nerve Physiology
12. Central Nervous System
13. Somatic Nervous System
14. Autonomic Nervous System

Materials:

Required:

Lecture Materials:

Human Anatomy & Physiology, 6th ed. 2004. E.N. Marieb. Benjamin Cummings.

Laboratory Materials:

Human Anatomy & Physiology Laboratory Manual, cat edition, 8th. 2004. E.N. Marieb. Benjamin Cummings.

Recommended:

Study Guide for Human Anatomy & Physiology, 6th ed. 2004. E.N. Marieb. Benjamin Cummings.

Anatomy and Physiology Coloring Workbook – a Complete Study Guide, 7th ed. 2003. E.N. Marieb. Benjamin Cummings.

Textbook support website @www.mariebmap.com