COURSE: BIOL 2404 (4-3-3)

TITLE: Biology for Health Sciences

CATALOG DESCRIPTION: A broad spectrum introduction to the study of biology as it pertains to the allied health science occupations. Content will include the basic principles of physiology at the cell and molecular level. Laboratory experiments will be performed to introduce students to hands-on practices that support medical procedures.

CREDIT HOURS: Four (4)

PREREQUISITE: The student must have passed all sections of the THEA test and/or completed all reading, writing, and math requirements or be taking Math 0308 concurrently. Laboratory fee $35. F, S, Su (2607075103).

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Email: dwilliams@kilgore.edu
Website: http://kcfac.kilgore.cc.tx.us/micro

COURSE RATIONALE: This course meets the requirements for a four hour lab science class for health science majors. It will not satisfy the requirement for science or pre-professional majors.


Supplements: Kilgore College Biology 2404 Laboratory Handout Packet, Kilgore College Biology 2404 Instructor Web Site

Revised: 08/18/10
EVALUATION: Lecture exams are composed of both subjective and objective questions. Lab exams are of a practical nature. Your grade for the course will be based upon the following point totals:

Lecture: 50% of final grade
- 4 Major Exams (x100) = 400
- Quizzes/Daily Grades = 100
- 1 Comprehensive Final = 100
- Total Points = 600

Laboratory: 50% of final grade
- 4 Major Lab Practicals = 400
- Daily Grades/Quizzes = 200
- Total Points = 600

1200 Total Points for Lecture & Lab

1200-1080 = A
1079-960 = B
959-840 = C
839-720 = D
719 or less = F

CLASSROOM POLICIES: Drop date: As determined by the Registrar and listed in the current Kilgore College Catalog. If you are unable to complete this course, you must withdraw from the course by the semester drop date. Withdrawing from the course is a formal procedure that YOU must initiate. I cannot do it for you. You may do this in the Registrar's office. If you stop attending and do not withdraw you will receive a performance grade, most likely an “F”.

School policy is to drop a student after a total of 12.5% of the total semester's hours of absence. The policy states that an instructor “may drop a student when his/her lack of attendance prohibits him/her from meeting the course objectives or when a student accumulates excessive absences”. An absence is defined as not being in class whether or not you have an excuse. Lecture and lab count as one course, so absences in both are added together.

It is disruptive to the whole class to have people entering late. Therefore, after you have been tardy three times, each additional tardy will be counted as an absence. Please see me after class if you are late so that I will know you are not absent.

Revised: 08/18/10
There is zero tolerance for cheating. See student handbook for academic honesty policy.

You earn your grade. **I do not give extra credit assignments and I do not “give” points** at the end of the semester.

**All cellular devices must be turned off and out of sight during class times. If your phone goes off during class you will be asked to leave.**

Any UNEXCUSED absence from a major lecture or lab exam will be an **automatic zero**. A doctor’s excuse or an official school business excuse are the only excused absences allowed. If you do not contact me before class when you return from an absence, there will be **No** chance to make up the missed work.

Make-up day for any excused absence from a major lecture exam will be scheduled the week before final exams. You are only allowed **one major exam makeup** grade. If you know in advance you will be absent, please let me know.

You will find a quiz for each chapter on my website. These quizzes are “take-home” quizzes to be done outside of class and are worth 10 points each. At the end of the semester, I will take the 10 highest quiz grades and count them as an exam grade. **Quizzes are always due the next class period after we have completed a chapter. Late quizzes will not be taken, and you must attend class on the day a quiz is due for that quiz to be counted.**

**Disclaimer:** Your instructor reserves the right to make modifications in content and schedules as necessary to promote the best education possible within prevailing conditions affecting this course.
COMMON COURSE OUTCOMES:

1. describe, apply, outline concepts of the scientific method as it relates to biology and everyday life.
   a. Activities: Text, lab manual reading, class lectures, discussions, lecture and laboratory assignments.
   b. Assessments: Major exams, assignments, laboratory practicals, web assignments, and final exam.
   c. EEO:B,C,D

2. identify, explain, contrast, compare the basic concepts of atomic structure and apply this knowledge to identify, contrast and give examples of inorganic and organic (biological) molecules and enzymes.
   a. Activities: Text, lab manual reading, class lectures, discussions, lecture and laboratory assignments.
   b. Assessments: Major exams, assignments, laboratory practicals, web assignments, and final exam.
   c. EEO:D

3. describe, identify, apply, compare and contrast the basic concepts of cell structure and function in prokaryotes and eukaryotes
   a. Activities: Text, lab manual reading, class lectures, discussions, lecture and laboratory assignments.
   b. Assessments: Major exams, assignments, laboratory practicals, web assignments, and final exam.
   c. EEO: A,C,D

4. identify, label, demonstrate the basic concept of the microscope and practice proper microscope techniques.
   a. Activities: Text and lab manual readings, class lecture and discussions, laboratory exercises and discussions, and web site activities.
   b. Assessment: Practicals, quizzes, online web assignments
   c. EEO:D

5. describe, label and demonstrate the basic concepts of the cell membranes and explain the role osmosis and diffusion in the movement of substances in and out of the cell.
   a. Activities: Text, lab manual reading, class lectures, discussions, lecture and laboratory assignments.
   b. Assessments: Major exams, assignments, laboratory practicals, web assignments, and final exam.
   c. EEO: D

Revised: 08/18/10
6. describe, identify, compare and contrast the basic concepts of energy flow and photosynthesis in the life of animal and plant cells and summarize its importance in organisms.
   a. Activities: Text, lab manual reading, class lectures, discussions, lecture and laboratory assignments.
   b. Assessments: Major exams, assignments, laboratory practicals, web assignments, and final exam.
   c. EEO:D

7. define, describe, identify, apply, compare and contrast the basic concepts of molecular biology and heredity.
   a. Activities: Text, lab manual reading, class lectures, discussions, lecture and laboratory assignments.
   b. Assessments: Major exams, assignments, laboratory practicals, web assignments, and final exam.
   c. EEO:A, D

8. define, describe, identify, and contrast the basic concepts of gene expression and regulation.
   a. Activities: Text, lab manual reading, class lectures, discussions, lecture and laboratory assignments.
   b. Assessments: Major exams, assignments, laboratory practicals, web assignments, and final exam.
   c. EEO: A, D

9. describe, identify, compare and contrast the basic concepts of cellular reproduction.
   a. Activities: Text, lab manual reading, class lectures, discussions, lecture and laboratory assignments.
   b. Assessments: Major exams, assignments, laboratory practicals, web assignments, and final exam.
   c. EEO:A, B,D

10. describe, identify, compare, contrast the basic concepts of inheritance and predict outcomes of genetic crosses and inheritance patterns.
    a. Activities: Text, lab manual reading, class lectures, discussions, lecture and laboratory assignments.
    b. Assessments: Major exams, assignments, laboratory practicals, web assignments and final exam.
    c. EEO:A,D

11. describe, identify and give examples of the basic principles of evolution.
    a. Activities: Text, lab manual reading, class lectures, discussions, lecture and laboratory assignments.
    b. Assessments: Major exams, assignments, laboratory practicals, web assignments, and final exam.
    c. EEO:A
COMMON COURSE OUTCOMES (continued):

12. describe, identify and give examples of the concepts of homeostasis and the organization of the animal body.
   a. Activities: Text, lab manual reading, class lectures, discussions, lecture and laboratory assignments.
   b. Assessments: Major exams, assignments, laboratory practicals, web assignments and final exam.
   c. EEO:D

14. define, describe, identify and summarize the concepts of the immune system and its defense against disease.
   a. Activities: Text, lab manual reading, class lectures, discussions, lecture and laboratory assignments.
   b. Assessments: Major exams, assignments, laboratory practicals, web assignments and final exam.
   c. EEO:A,D

Exemplary Educational Objectives (EEO) are in the Faculty Handbook or on the Kilgore College web-site.

ADDITIONAL SUPPLIES:

1. Gloves.
2. Goggles

**Gloves and goggles are mandatory for many labs.**
Lecture Outline

**Unit 1 Basic Chemistry and Physiology at the Cellular Level**
- Chapter 1  An introduction to Life on Earth; pp. 1-17
- Chapter 2  Atoms, Molecules, and Life; pp. 21-33
- Chapter 3  Biological Molecules; pp.37-54
- Chapter 4  Cell Structure and Function; pp. 57-77
- Chapter 5  Membrane Structure and Function; pp. 81-97
- Chapter 6  Energy Flow in the Life of a Cell; pp. 101-113
- Chapter 8  Harvesting Energy: Glycolysis and Cellular Respiration; pp. 133-146

**Unit 2 Basic Molecular Biology, Cell Reproduction and Inheritance**
- Chapter 9  DNA, the Molecule of Heredity; pp. 149-163
- Chapter 10  Gene Expression and Regulation; pp. 167-186
- Chapter 11  The Continuity of Life: Cellular Reproduction; pp. 191-217
- Chapter 12  Patterns of Inheritance; pp. 221-244

**Unit 3 Evolution**
- Chapter 14  Principles of Evolution; pp. 277-292

**Unit 5 Animal Anatomy and Physiology**
- Chapter 31  Homeostasis and the Organization of the Animal Body; pp. 635-646
- Chapter 32  Circulation; pp. 649-666
- Chapter 34  Nutrition and Digestion; pp. 685-703
- Chapter 39  Action and Support: The Muscles and Skeleton pp. 797-811
Lab Outline

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| Lab Practical #4 (Labs 22, 24-27) |