



**COWLEY COLLEGE
& Area Vocational Technical School**

COURSE PROCEDURE FOR

BIOLOGY REVIEW
BIO 4110 1 Credit Hours

Student Level:

This course is open to students on the college level in either the freshman or sophomore year.

Catalog Description of the Course:

BIO 4110 - BIOLOGY REVIEW (1 hr)

A course designed to introduce materials covered in BIO4111 Principles of Biology. The course is graded on a pass/fail scale and no letter grade will be given. It is recommended for students planning to take BIO4150 Human Anatomy and Physiology or BIO4160 Microbiology but has not had a recent life science course, or students wishing to prepare for BIO4111 Principles of Biology.

Prerequisite:

None

Controlling Purpose:

The Biology Review Course is designed to help the student increase their knowledge concerning basic biological concepts. It is not intended to replace Principles of Biology but may be helpful to Health-Profession majors that have not had a recent life science course. The course is graded on a pass/fail scale and no letter grade will be given.

Learner Outcomes:

Upon completion of this course the student will be able to apply the basic biological concepts needed to pursue additional life science studies.

Units Outcomes and Criterion Based Evaluation Key for Core Content:

The following defines the minimum core content not including the final examination period. Instructors may add other material as time allows.

Evaluation Key:

- A = All major and minor goals have been achieved and the achievement level is considerably above the minimum required for doing more advanced work in the same field
- B = All major goals have been achieved, but the student has failed to achieve some of the less important goals. However, the student has progressed to the point where the goals of work at the next level can be easily achieved.
- C = All major goals have been achieved, but many of the minor goals have not been achieved. In this grade range, the minimum level of proficiency represents a person who has achieved the major goals to the minimum amount of preparation necessary for

- taking more advanced work in the same field, but without any major handicap of inadequacy in his background.
- D = A few of the major goals have been achieved, but the student's achievement is so limited that he is not well prepared to work at a more advanced level in the same field.
 - F = Failing, will be computed in GPA and hours attempted.
 - N = No instruction or training in this area.

TOPIC 1: Basic Chemistry

Outcomes: Upon completion of this section, the student will have an understanding of chemistry as it relates to living systems.

A	B	C	D	F	N	Specific Competencies Demonstrate the ability to:
						Diagram and label basic atomic structure
						Use a periodic table to determine protons, neutrons and electrons
						Distinguish between neutral atoms and ions regarding electron number
						Explain the two major types of bonding, covalent and ionic
						Define and identify acids and basis
						Use a pH scale to classify acids and basis
						Distinguish between organic and inorganic compounds
						Give and briefly define the four major classes of organic compounds

TOPIC 2: Cell Physiology

Outcomes: Upon completion of this section, the student will be able to explain the basic functions of the cell.

A	B	C	D	F	N	Specific Competencies Demonstrate the ability to:
						Identify and give the functions of the cell organelles
						Distinguish between prokaryotic and eukaryotic cells
						Explain the movement of water into and out of a cell using the terms isotonic, hypotonic, hypertonic and osmosis
						Define and give an example of diffusion
						Distinguish between active transport and passive transport
						Diagram the fluid-mosaic model of the plasma membrane

TOPIC 3: Bioenergetics and Cell division

Outcomes: Upon completion of this section, the student will understand the cell processes involved in bioenergetics' and cell division.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Explain the action of enzymes using the terms substrate, active site, enzyme-substrate complex, reactants and products
						Give the importance of enzymes in the process of metabolism
						Distinguish between anabolism and catabolism
						List the chemical equation for cellular respiration and explain it's importance
						Explain the importance of ATP in living systems
						Identify the stages of mitosis
						Explain the importance of mitosis and meiosis
						Compare and contrast the processes of mitosis and meiosis

TOPIC 4: Genetics

Outcomes: Upon completion of this section, the student will understand the relationship between DNA and inheritance.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Diagram and label a portion of DNA
						Explain the relationship between a chromosome, gene and DNA
						Distinguish between DNA and RNA
						Diagram and explain the importance of DNA replication
						Explain the steps involved in transcription, translation and protein synthesis
						Diagram a genetic cross using a Punnett square
						Give and briefly define the principles of genetics outlined by Gregor Mendel
						Apply the principles of genetics to human reproduction and development

Projects Required:

None

Text Book required: Contact bookstore for current text

Materials/Equipment Required:

None

Attendance Policy:

Students should adhere to the attendance policy outlined by the instructor in the course syllabus.

Grading Policy:

The grading policy will be outlined by the instructor in the course syllabus.

Maximum Class Size:

Based on classroom occupancy (24)

Course Time Frame:

The U.S. Department of Education, Higher Learning Commission and the Kansas Board of Regents define credit hour and have specific regulations that the college must follow when developing, teaching and assessing the educational aspects of the college. A credit hour is an amount of work represented in intended learning outcomes and verified by evidence of student achievement that is an institutionally-established equivalency that reasonably approximates not less than one hour of classroom or direct faculty instruction and a minimum of two hours of out-of-class student work for approximately fifteen weeks for one semester hour of credit or an equivalent amount of work over a different amount of time, The number of semester hours of credit allowed for each distance education or blended hybrid courses shall be assigned by the college based on the amount of time needed to achieve the same course outcomes in a purely face-to-face format.

Refer to the following policies:

[402.00 Academic Code of Conduct](#)

[263.00 Student Appeal of Course Grades](#)

[403.00 Student Code of Conduct](#)

Disability Services Program:

Cowley College, in recognition of state and federal laws, will accommodate a student with a documented disability. If a student has a disability which may impact work in this class which requires accommodations, contact the Disability Services Coordinator.