COURSE OUTLINE: BIO180 - BIOLOGY I

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Approved: Bob Chapman, Chair, Health

Course Code: Title	BIO180: BIOLOGY I FOR PCD
Program Number: Name	3060: PRE-HEALTH CERT DIPL
Department:	PRE-HEALTH
Semesters/Terms:	19F
Course Description:	This introductory biology course will introduce the student to the basic concepts of biology, both general and human. The course begins with an overview of life and biological systems. This is followed by an introduction to human biology as it relates to health and wellness. Emphasis is placed on organization of the body into cells, tissues and organ systems. Topics include characteristics, classification and organization of life, cell structure and function, meiosis and mitosis, homeostasis, and the anatomy and physiology of select human organ systems.
Total Credits:	4
Hours/Week:	4
Total Hours:	60
Prerequisites:	There are no pre-requisites for this course.
Corequisites:	There are no co-requisites for this course.
This course is a pre-requisite for:	BIO181
Vocational Learning Outcomes (VLO's) addressed in this course: **Please refer to program web page for a complete listing of program outcomes where applicable.**	**3060 - PRE-HEALTH CERT DIPL** VLO 1 Examine fundamental biological concepts, processes and systems of the human body, including the structure, function and properties of the molecules of life, cells, tissues and organ systems in relation to homeostasis and health.
Essential Employability Skills (EES) addressed in this course:	EES 4 Apply a systematic approach to solve problems. EES 5 Use a variety of thinking skills to anticipate and solve problems. EES 6 Locate, select, organize, and document information using appropriate technology and information systems. EES 8 Show respect for the diverse opinions, values, belief systems, and contributions of others. EES 10 Manage the use of time and other resources to complete projects. EES 11 Take responsibility for ones own actions, decisions, and consequences.
General Education Themes:	Science and Technology
Course Evaluation:	Passing Grade: 50%,
Books and Required Resources:	Human Biology, Anataomy & Physiology for the Health Sciences by Roscoe,Wendi A Publisher: Nelson Edition: 2nd

ISBN: 9780176739157

Course Outcomes and Learning Objectives:

Course Outcome 1	**Learning Objectives for Course Outcome 1**
1. Describe the characteristics and general organization of life and the human body.	1.1 Describe the properties of living things. 1.2 Describe the characteristics of the 6 kingdoms and identify the phyla of the animal kingdom. 1.3 Describe the levels of organization of the human body. 1.4 Identify the organ systems of the human body. 1.5 Describe the general structure and function of each organ system. 1.6 Define anatomical terminology, including directional terms, body regions, planes and cavities. 1.7 Define homeostasis and describe feedback mechanisms.
Course Outcome 2	**Learning Objectives for Course Outcome 2**
2. Relate the major biological molecules to the functioning of the human body.	2.1 Describe the basic chemistry of organic molecules. 2.2 Discuss the properties of water that make it an ideal universal solvent in living things. 2.3 Describe how macromolecules are formed and broken down via dehydration synthesis and hydrolysis. 2.4 Describe the structure of proteins, carbohydrates and lipids. 2.5 Identify the functions of proteins, carbohydrates and lipids in the human body. 2.6 Describe the general structure of nucleic acids (nucleotides) and compare DNA and RNA.
Course Outcome 3	**Learning Objectives for Course Outcome 3**
3. Identify the structure and function of each organelle in a generalized cell including the cell membrane.	3.1 Describe the components of cell theory. 3.2 Describe the difference between prokaryotic and eukaryotic cell structure. 3.3 Identify the cellular organelles and describe the function of each within the cell. 3.4 Describe the structure of the plasma membrane, including its components and their functions. 3.5 Distinguish among various forms of transport across the cell membrane (active and passive transport, diffusion, osmosis, facilitated transport etc.). 3.6 Describe the sodium-potassium pump and state its significance 3.7 Define metabolism and describe the role of ATP in cell metabolism.
Course Outcome 4	**Learning Objectives for Course Outcome 4**
4. Demonstrate an understanding of cellular reproduction.	4.1 Describe the events that occur during the cell cycle. 4.2 Distinguish between mitosis and meiosis and the stages of each. 4.3 Explain the role of mitosis and meiosis in the human life cycle.
Course Outcome 5	**Learning Objectives for Course Outcome 5**

5. Demonstrate an understanding of genetic inheritance.	5.1 Describe Mendel`s theory of inheritance of dominant and recessive traits. 5.2 Calculate the probability of various genotypes and phenotypes using Punnett squares. 5.3 Calculate the various genotypes and phenotypes in a dihybrid cross
Course Outcome 6	**Learning Objectives for Course Outcome 6**
6. Identify the major components and physiology of the musculoskeletal system.	6.1 List the functions of the skeletal system. 6.2 Classify the bones of the skeletal system and provide examples of each. 6.3 Distinguish between the structure and functions of compact bone, spongy bone, red bone marrow and yellow bone marrow. 6.4 Name, locate and describe the structure of cranial bones, facial bones, the vertebral column and the appendicular skeleton. 6.5 Classify joints structurally and functionally. 6.6 Describe the general structure and the movements allowed by synovial joints. 6.7 List the functions of muscles. 6.8 Identify and locate the major superficial muscles and muscle groups. 6.9 Distinguish structure and functions among skeletal, smooth and cardiac muscle.
Course Outcome 7	**Learning Objectives for Course Outcome 7**
7. Identify the major components and physiology of the nervous system.	7.1 List the functions of the nervous system. 7.2 Describe the functional divisions of the nervous system (afferent, efferent, CNS,PNS,SNS,ANS, sympathetic, parasympathetic). 7.3 Describe the types of sensory receptors. 7.4 Label a typical multipolar neuron and describe the function of each of its components. 7.5 Distinguish among afferent, efferent and interneurons. 7.6 Distinguish between white matter and grey matter. 7.7 Name and list the function of the six types of neuroglia. 7.8 Differentiate between cranial and spinal nerves. 7.9 Identify the parts of the brain (cerebrum, cerebellum, brainstem) and state their main functions. 7.10 Identify the lobes of the brain.
Course Outcome 8	**Learning Objectives for Course Outcome 8**
8. Identify the major components and physiology of the endocrine system.	8.1 Define hormone and describe the function of the endocrine system and the role of hormones. 8.2 Describe the relationship between the endocrine system and the ANS. 8.3 Describe the relationship between the hypothalamus and the pituitary gland. 8.4 Identify hormones produced by the thyroid, parathyroid, pancreas and adrenal glands. 8.5 Describe feedback loops controlling sugar and calcium levels in the blood.

Evaluation Process and Grading System:	<table><tr><th>Evaluation Type</th><th>Evaluation Weight</th></tr><tr><td>Final Exam</td><td>20%</td></tr><tr><td>Mid-term Exam</td><td>20%</td></tr><tr><td>Unit Tests</td><td>60%</td></tr></table>
Date:	August 7, 2019
Addendum:	Please refer to the course outline addendum on the Learning Management System for further information.