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Website:
Please visit the River East Collegiate home page. If you follow the link “About Us” and “Staff Directory” students will have access to the class website. Students will be added by their instructor to the class they are registered for and they must use their student username and password to view it. This webpage will give students access to the class calendar, information for upcoming tests and quizzes, answer keys to assignments, etc. It’s imperative that students visit this site periodically through the semester! (Please contact your instructor if you cannot access the site)

Evaluation:
Evaluation will consist of: demand assignments, quizzes, unit tests, and a final exam. Grading will be out of a scale of 1-5 and will indicate if the curricular outcome has been met.

SCALE:

<table>
<thead>
<tr>
<th>LEVEL 1 – LACK OF EVIDENCE</th>
<th>Accurate and meaningful assessment was not possible due to:</th>
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<tbody>
<tr>
<td></td>
<td>i. Work output, quality of assignments and achievement on tests demonstrates an inadequate understanding of curricular outcomes</td>
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<td>ii. Assigned task has not been completed or submitted for marking</td>
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<tr>
<th>LEVEL 2 - BEGINNING</th>
<th>Indicates partial understanding; students at this level have limited success with the stated outcome even with support</th>
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<tr>
<td>LEVEL 3 - APPROACHING</td>
<td>Indicated a basic understanding; students at this level demonstrate inconsistent understanding of the stated outcomes</td>
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<tr>
<td>LEVEL 4 - PROFICIENCY</td>
<td>Indicates a well-developed understanding of the grade level outcome; students at this level are competent with the skills and knowledge identified in the outcome and are on par with curriculum expectations</td>
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<tr>
<td>LEVEL 5 - MASTERY</td>
<td>Indicates an insightful understanding of the grade level outcome; students at this level can apply and transfer knowledge to novel situations</td>
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Demand Assignments:
Demand assignments will assess the comprehension of curricular outcomes as they are covered in the course. These assignments must be completed in class only.

Students will have access to their textbooks, class notes, and daily work in order to complete the demand assignments. Cell phones will not be accessible during this time and students must work independently.

Assignments must be completed during the assigned time and submitted in for grading.

If a student has missed a demand assignment they must make arrangements with the instructor ahead of time to complete it on a spare or at lunch. If arrangements aren’t made, the student will be asked to complete the work the next time they are present in class. This will require them to make arrangements with another classmate to get the notes they missed that day.

Note: This part of the assessment requires the student to be present in class so attendance is very important through the semester (this work cannot be taken home to complete).
Quizzes:
For each unit, there will be a quiz that will assess a curricular outcome and these mainly will be diagrams of the various body systems.

Unit Tests:
Unit tests will be based on the unit review that is provided to students at the end of each section covered in the curriculum. Specific information regarding the tests will be posted on the website so please ensure you visit the site prior to writing the test.

For students missing a test the following may apply:

i. Any student missing a test without a valid reason will be assigned a grade of zero.
ii. If a student provides a valid reason, the student may make arrangements to write the test at a later date
   **Note:** An alternative test **WILL** be given to the student.

Absences:
Students are responsible to get any missed notes from another student in the class. Any missed assignments must be picked up from the instructor.

Late Assignments:
Failure to submit assignments on time will result in a mark of zero. The teacher will record NHI (NOT HANDED IN) for the assignment when calculating marks. Only in exceptional cases (typically due to illness or accident) will a teacher accept an assignment after the deadline.

**Note:** Progress in the course would NOT be possible if deadlines are not met.
Curricular Outcomes:

Unit 1: Wellness and Homeostasis

1.1 Thinking about Health and Wellness
   • Increased awareness of personal wellness

1.2 Personal Wellness
   • Increased awareness of personal wellness and family health history

1.3 Wellness and Society
   • Explain how individual wellness choices affect others

1.4 Homeostasis (Systems in Balance)
   • Identify life processes that individual cells, as well as complex organisms, need to manage
   • Describe how the body attempts to maintain an internal balance called homeostasis, recognizing that the conditions in which life processes can occur are limited
   • Explain the principle of negative feedback and identify how the body stabilizes systems against excessive change

1.5 Cells and Homeostasis
   • Explain how cell membranes regulate movement of materials into and out of cells and recognize the importance of this regulation in managing life processes and maintaining homeostasis
   • Identify factors that influence movement of substances across a membrane, recognizing that movement of these substances is important for the internal balance of the cell

1.6 Energy and Life
   • Explain the role of energy in maintaining homeostasis (balance or equilibrium are equivalent terms) in the cell

Unit 2: Digestion and Nutrition

2.1 Cell Components and Biological Molecules
   • Describe the characteristics of water and its role in biological systems
   • Understand the structure and function of biological molecules in living systems: carbohydrates, lipids, proteins, and nucleic acids
   • Compare and contrast dehydration synthesis and hydrolysis
   • List the types of carbohydrates, lipids, proteins, and nucleic acids

2.2 Human Digestive System
   • Explain the need for digestion in humans
   • Identify from a diagram, model, or specimen, and describe the function of the following structures of the human digestive system:
     o tongue
     o teeth
     o salivary glands
     o esophagus
     o epiglottis
     o stomach
     o liver
     o pancreas
     o gall bladder
     o small intestine
     o large intestine
     o rectum
     o appendix
     o anus
   • Compare and contrast mechanical and chemical digestion
   • Describe the role of sphincters and peristalsis in the digestive process
2.3 Chemical Digestion, Absorption and Control

- Describe the source and function(s) of the following digestive secretions:
  - Amylase
  - Mucous
  - Pepsin
  - HCl
  - Bile
  - Pepsinogen
  - Lipase
  - Peptidase
  - Maltase
  - Sodium bicarbonate

- Identify and describe the structure and function of villi in the small intestine

2.4 Nutrition

- Describe the functions of the six basic types of nutrients (carbohydrates, lipids, proteins, vitamins, minerals, water) necessary for the normal functioning of the human body

- List one dietary source for each of the six main nutrients necessary for the human diet

- Explain the need for a balanced diet both in terms of satisfying the body's energy requirements and in the prevention of dietary disorders

2.5 Disorders and Diseases of the Digestive System

- Describe five of the following disorders/diseases of the digestive system:
  - anorexia nervosa
  - bulimia
  - hyper-vitaminosis
  - malnutrition
  - ulcers
  - gallstones
  - lactose intolerance
  - appendicitis
  - crohn's disease
  - colitis
  - colon/stomach cancer
  - diabetes
  - diarrhea
  - cholera
  - amoebic dysentery
  - constipation
  - hemorrhoids
  - heartburn
  - typhoid fever
  - bacillary dysentery
  - jaundice
  - hepatitis
  - cirrhosis
  - food poisoning
Unit 3: Excretion

3.1 Excretory Organs
- Define the term excretion
- Describe how excretion aids in maintaining homeostasis in the body
- List the primary metabolic wastes produced in human body (i.e., carbon dioxide, water, ammonia, mineral salts) and the source of each
- Compare the role of the major excretory organs (kidneys, lungs, skin, liver) in the excretory process
- Predict the effect(s) of malfunctioning excretory organs on homeostasis in the human body

3.2 The Urinary System
- Identify on a diagram or model and describe the function of the following structures of the human urinary system:
  - kidneys
  - renal cortex
  - renal medulla
  - renal pelvis
  - renal arteries and veins
  - ureters
  - urinary bladder
  - urethra
- Identify from a diagram or model and describe the function of the following structures of the nephron:
  - afferent and efferent arterioles
  - glomerulus
  - Bowman's capsule
  - proximal convoluted tubule
  - peritubular capillaries
  - Loop of Henle
  - distal convoluted tubule
  - collecting duct
- Differentiate between the terms filtration, reabsorption, and secretion as they relate to nephron function
- Analyze and compare water and solute concentrations in various parts of the nephron and urine
- Describe the role of antidiuretic hormone (ADH) in maintaining water balance in the body
- Describe the role of aldosterone in maintaining blood pressure in the body
- Explain the effect of diuretics such as caffeine and alcohol on water loss

3.3 Diseases and Disorders of the Urinary System
- Describe how the following diseases/disorders affect the urinary system:
  - diabetes (Type I and II)
  - nephritis
  - kidney stones
  - urinary tract infection
- Explain the function of the kidney dialysis machine
- Discuss patient options when kidney failure occurs (i.e. kidney dialysis technology, organ transplant)

Unit 4: Gas Exchange

4.1 Respiration
- Define the terms respiration and gas exchange
- Distinguish between external respiration, internal respiration and cellular respiration
- List four conditions required for gas exchange across a membrane
4.2 The Human Respiratory System

- Identify from a model, diagram, or specimen and describe the function of the following structures of the human respiratory system:
  - Lungs
  - Pleura
  - Nasal cavity
  - Epiglottis
  - Vocal cords
  - Bronchi
  - Alveoli
  - Diaphragm
  - Pharynx
  - Larynx
  - Trachea
  - Bronchial tubes

- Explain how the structure of alveoli are related their function
- Illustrate and explain the mechanics of breathing in humans, including the role of the diaphragm and intercostal muscles in the changing volume and pressure of the chest cavity
- Measure respiration rate and lung capacities, i.e. vital capacity

4.3 Chemistry of Respiration

- Describe the negative feedback mechanisms (chemoreceptors and the medulla oblongata) responsible for the control of breathing in humans
- Predict the effects of varying blood levels of carbon dioxide, oxygen, and carbon monoxide on breathing rate
- Describe the role of hemoglobin in transporting oxygen and carbon dioxide in the blood

4.4 Disorders and Diseases of the Respiratory System

- Describe the cause, symptoms, and treatment of the following disorders of the respiratory system:
  - lung cancer
  - emphysema
  - chronic bronchitis
  - asthma

Unit 5: Circulation

5.1 Blood Components

- Describe the three major functions of blood in the human body i.e. transport, regulation, protection
- List the major components of blood
- Differentiate between erythrocytes, leukocytes and platelets in terms of appearance, origin, numbers and function in the body
- Identify the following cellular components of blood from prepared specimen(s), diagram(s), photograph(s) or electron micrograph(s): erythrocytes, the five main types of leukocytes, and platelets
- Illustrate the sequence of events in a blood clotting reaction

5.2 Blood Groupings

- Differentiate between blood antigens and blood antibodies
- Illustrate the differences between the ABO blood groups
- Explain how the rhesus factor can have implications for blood transfusions
- Describe the disease erythroblastosis fetalis and possible preventative treatment for this condition
- Explain the terms universal donor and universal recipient in reference to blood groups
- Predict the physiological consequences of blood transfusions involving different blood types
- Discuss how the study of blood can be used in forensic science
5.3 Disorders of the Blood
- Describe how the following diseases/disorders affect the blood:
  - Hemophilia
  - Anemia
  - Sickle cell anemia
  - Leukemia

5.4 The Circulatory System
- List six ways in which the circulatory system maintains homeostasis in the human body
- Explain how the structure of the five different types of blood vessels (arteries, arterioles, veins, venules, capillaries) is related to their function
- Describe how the structure of the heart is related to its function, i.e. double pump
- Identify and trace blood flow through the following structures of the heart from a specimen, model, or diagram:
  - left and right atria
  - left and right ventricle
  - left and right pulmonary arteries
  - left and right pulmonary veins
  - superior/inferior vena cava
  - septum
  - aorta
  - left and right semilunar valves
  - left and right atrioventricular valves
- Describe the difference between the systemic and pulmonary circulatory system
- Identify the following systemic blood vessels from a specimen, model, or diagram:
  - carotid arteries
  - jugular veins
  - subclavian artery and vein
  - superior/inferior vena cava
  - coronary artery and vein
  - renal artery and vein
  - iliac artery and vein
  - hepatic portal vein

5.5 Heartbeat
- Differentiate between systole and diastole and relate these to heart sounds
- Describe the intrinsic control of heartbeat, i.e. nervous (SA Node, AV Node, Perkinje Fibers, Bundle of HIS), and chemical (adrenaline, noradrenaline)
- Explain the role of pacemakers in regulating heartbeat
- Describe the effects of adrenaline and noradrenaline on heart rate
- Measure your own heart rate
- Explain the effect of physical activity on heart rate
- Relate cardiac output to fitness levels

5.6 Cardiovascular Disease
- Describe the effects an aneurysm may have on the body
- Explain the dangers of atherosclerosis and the risk factors that accelerate its development
- Describe angina and the factors that can cause this condition
- Explain 3 possible medical procedures used to rectify atherosclerosis (i.e., coronary bypass, angioplasty, drug therapy).
- Distinguish between congenital heart defects and those related to lifestyle
- Discuss lifestyle factors which contribute to heart disease, i.e., smoking, obesity, diabetes, diet, kidney problems

5.7 Blood Pressure and Fluid Exchange
- Identify systolic and diastolic blood pressure using a sphygmomanometer
- List and describe extrinsic factors (e.g., exercise, caffeine, nicotine) which affect transient blood pressure
- Describe the term hypertension and discuss its causes, effects and treatment
Unit 6: Lymphatic and Immune System

6.1 The Lymphatic System
- Describe the function of the lymphatic system in the human body
- List the components of lymph in the human body, i.e., fat, protein, water, white blood cells
- Identify the following structures and functions of the lymphatic system from a specimen, model, or diagram:
  - thymus
  - tonsil
  - lymph nodes
  - spleen
  - lymph vessel
- Differentiate between lymph vessels and blood vessels

6.2 Immunity
- Describe the non-specific protective mechanisms against pathogens found in all vertebrates (i.e. physical and chemical barriers, inflammatory response)
- Differentiate between the primary and secondary immune response
- Differentiate between passive and active immunity
- Explain how a vaccination or immunization may prevent a person from contracting a disease

6.3 Diseases and Disorders of the Immune System
- Describe the cause, symptoms, and treatment of five of the following disorders of the blood and immune system:
  - anemia
  - mononucleosis
  - leukemia
  - hemophilia
  - AIDS
  - asthma
  - anaphylactic shock
  - lupus
  - multiple sclerosis
  - rheumatic fever
  - arthritis
  - Hodgkin's disease

Unit 7: Control Mechanisms – Nervous System

7.1 Nervous Coordination and Regulation
- List the main functions of the nervous system, i.e. receive, coordinate, and respond to information
- Differentiate between the terms stimulus, receptor, impulse, and effector
- Describe the importance of the nervous system in maintaining homeostasis within the human body
- Describe the function of a neuron
- Identify from a diagram or model and describe the function of the following structures of a neuron:
  - cell body
  - dendrites
  - axon
  - Schwann cells (myelin)
  - node(s) of Ranvier
- Differentiate between sensory, motor, and interneurons
- Illustrate and explain the function of a reflex arc
- Explain how a nerve impulse is transmitted through a neuron using the following terms:
  - resting potential (polarization)
  - sodium-potassium pump
  - action potential
  - threshold
  - all-or-none response
- Describe the transmission of a nerve impulse across a synapse
7.2 Diseases and Disorders of the Nervous System

- Describe the cause, symptoms, and treatment of two of the following disorders of the nervous system:
  - multiple sclerosis
  - Parkinson's disease
  - Alzheimer's disease
  - cerebral palsy
  - meningitis
  - paraplegia
  - quadriplegia
  - sciatica
  - amyotrophic lateral sclerosis (ALS)
  - attention deficit hyperactivity disorder
  - lead poisoning
  - mercury poisoning

Unit 8: Control Mechanisms – Endocrine System

8.1 The Human Endocrine System

- Define the term hormone and endocrine gland
- Describe the importance of hormones in maintaining homeostasis within the human body
- Differentiate between steroid and non-steroid hormones in terms of their controlling mechanisms
- Explain the regulation of hormone secretion through negative feedback mechanisms
- Identify the location of the following major endocrine glands/organs of the human body from a diagram or model, list the hormone(s) produced and function(s) of each:
  - Hypothalamus
  - Pituitary gland
  - Thyroid gland
  - Parathyroid gland
  - Adrenal gland
  - Pancreas
  - Ovaries
  - Testes
- Explain why the pituitary gland is referred to as the "master gland"
- Describe how the hypothalamus controls the secretions of the pituitary gland
- Predict the effect of varying chemical stimuli on the secretion of endocrine glands
- Describe the role of insulin and glucagon in controlling blood sugar levels

8.2 Diseases and Disorders of the Endocrine System

- Describe the cause, symptoms, and treatment of three of the following disorders related to the hormones below:
  - GH (giantism, acromegaly, dwarfism)
  - cortisol, aldosterone (Cushing's disease, Addison's disease)
  - thyroxine (hyperthyroidism, goiter, hypothyroidism, cretinism)
  - insulin (hypoglycemia, hyperglycemia, diabetes mellitus)
- Discuss the effects of anabolic steroid use on the human body

Unit 9: Wellness and Homeostatic Changes

9.1 Responses to Changing Conditions

- To analyze examples of how different body systems work together to maintain homeostasis under various conditions

9.2 Aging

- Recognize that aging is a progressive failure of the body’s homeostatic responses and describe some changes that take place in different body systems as we age

9.3 Technology and Prolonging Life

- Describe how technology has allowed us to control our wellness and the ethical dilemmas that the use of technology can create