



BRITISH COLUMBIA INSTITUTE OF TECHNOLOGY

Operating Unit: Health Sciences

Program: Medical Radiology

Option:

## Course Outline

**BHSC 1113**

**Anatomy & Physiology 1**

**Start Date:** January, 1999

**End Date:** April, 1999

**Course Credits:** 2.5

**Term/Level:** 1

**Total Hours:** 32

**Total Weeks:** 16

**Hours/Week:** 2

**Lecture:** 2

**Lab:**

**Shop:**

**Seminar:**

**Other:**

### Prerequisites

**Course No. Course Name**

None.

### BHSC 1113 is a Prerequisite for:

**Course No. Course Name**

BHSC 2213 Anatomy & Physiology 2

### Course Calendar Description

An introduction to human anatomy and physiology using a systems approach. Emphasis is placed on those systems most commonly examined by the radiographic technologist. Systems covered in this course are: skeletal, integumentary, urinary, digestive and respiratory.

The remaining systems are covered in the second term anatomy and physiology course, BHSC 2213.

### Course Goals

- To attain a basic understanding of human anatomy and physiology that can be applied to other courses in the Radiography program.
- To become familiar with basic sectional anatomy.

### Evaluation

Midterm 1	30%
Midterm 2	30%
Final Exam	40%
<b>TOTAL</b>	<b>100%</b>

## Course Learning Outcomes/Competencies

Upon successful completion of this course, the student will be able to:

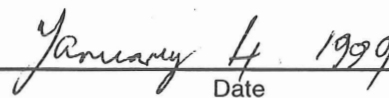
1. use correct terminology to describe the location and relationships of structure in the normal body.
2. describe the skeletal system in terms of:
  - a. functions
  - b. types of bones
  - c. the structure of a long bone
  - d. location of red and yellow marrow in the child and the adult
  - e. intramembranous and endochondral ossification of a long bone and the hormonal factors affecting growth
  - f. the structure of a synovial joint and movements at such joints.
3. identify the components of the integument and their functions.
4. identify the path that inspired air takes from the external nares to the alveoli.
5. describe the lungs in terms of position in the thoracic cavity and relationships to pleura, fissures, lobes and bronchopulmonary segments.
6. explain the muscular activity and associated pressure changes which occur during one respiratory cycle.
7. describe the pulmonary circulation in terms of the arrangement of blood vessels, the transport of respiratory gases, and gaseous exchange.
8. describe the basic structure of the urinary system, to the nephron level.
9. use the terms filtration, secretion, and reabsorption, to describe urine formation and composition.
10. describe the anatomy of the lower urinary tract, and the regulation of its activity.
11. describe the general structure of the alimentary tract and the relationships of accessory organs, together with peritoneal relationships.
12. describe the functions of the various parts of the alimentary tract in terms of mechanical and chemical digestion and absorption.

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## Course Content Verification

I verify that the content of this course outline is current, accurate, and complies with BCIT Policy.

  
\_\_\_\_\_  
Program Head/Chief Instructor

  
\_\_\_\_\_  
Date

Note: Should changes be required to the content of this course outline, students will be given reasonable notice.



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### Instructor(s)

Dr. John Emes

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### Learning Resources

#### Required:

Tortora & Grabowski. (1995). *Principles of Anatomy and Physiology* (8th Ed.). Harper Collins.

Medical dictionary, as required by program.

#### Reference:

The BCIT library has good holdings which may be useful to you in your studies.

*General Anatomy and Physiology Books:* These are located in call number group of QP 34, e.g., Textbook of Medical Physiology, Guyton, QP34.5 G9.

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### BCIT Policy Information for Students

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### Assignment Details



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Schedule

BHSC 1113

Anatomy & Physiology 1

# of Hours	Description
2	<b>Functional Body Organization</b> <ul style="list-style-type: none"> <li>organization in terms of cells, tissues, organs and systems.</li> <li>brief introduction to homeostasis, examples of nervous and hormonal feedback mechanisms.</li> <li>body cavities, gross contents, quadrants and regions of abdominopelvic cavity.</li> <li>surface landmarks of walls of body cavities.</li> <li>examples of sectional relationships of cavity contents (more details are given during discussion of the body systems).</li> </ul>
6	<b>Skeletal System</b> <p><i>Functions</i> — support, protection, calcium storage, hemopoiesis, movement.</p> <p><i>Types of bones</i> — long, short, flat, irregular, sesamoid, wormian.</p> <p><i>Description of a long bone</i> — epiphysis, diaphysis, metaphysis, articular cartilage, cancellous and compact bone, periosteum, endosteum, marrow cavity, lamellae, Haversian and Volkmann's canals, canaliculi, Sharpey's fibers, nutrient foramina.</p> <p><i>Bone marrow</i> — location of red and yellow marrow in non-adults and adults.</p> <p><i>Development &amp; growth of bone</i> — intramembranous ossification, endochondral ossification of a long bone — primary and secondary ossification centres, effects of diet, somatotrophic hormones, androgens and estrogens.</p> <p><i>Joints</i> — brief description of synarthroses, amphiarthroses, diarthroses, structure of a generalized synovial joint — joint cavity, synovial, membrane and fluid, bursae, ligaments, menisci, joint capsule.</p> <p><i>Movements</i> — adduction, abduction, flexion, extension, supination, pronation, rotation, circumduction, inversion, eversion, protraction, retraction, dorsi-flexion, hyperextension.</p>
1	<b>Integument</b> <p><i>Epidermis</i> — germinal layer, melanocytes, keratinization.</p> <p><i>Dermis</i> — blood vessels, sense receptors, sweat and sebaceous glands, hair roots.</p> <p><i>Skin functions</i> — protection, body temperature control, sensory organ.</p>
7	<b>Respiratory System</b> <p><i>Structure</i> — nasal cavities, external and internal nares, septum, turbinates, olfactory epithelium, sinuses (maxillary, frontal, ethmoid, sphenoid), naso- and oropharynx, larynx (thyroid and cricoid cartilages, epiglottis, vocal cords, glottis), trachea, primary, secondary and tertiary bronchi, bronchioles, alveolar ducts, sacs and alveoli "bronchial tree."</p> <p>Position of lungs, lobes, visceral and parietal pleura, intrapleural space and fluid, intraalveolar space.</p> <p><i>Ventilatory mechanics</i> — inspiratory and expiratory muscles, pressure changes.</p> <p><i>Pulmonary circulation</i> — pulmonary arteries and veins, gaseous exchange in alveoli, hemoglobin and oxygen transport.</p>

# of Hours	Description
4	<p><b>Urinary System</b>  <b>Basic structures:</b>  <i>Kidney</i> — blood supply and drainage.  — cortex, medulla, renal pyramids, renal columns, calyces, renal pelvis, nephron (Bowman's capsule, PCT, descending and ascending limbs of Loop of Henle, DCT, afferent and efferent arterioles, glomerulus, peritubular capillaries), collecting duct.  <i>Ureters, Urinary Bladder, Urethra</i>  <b>Urine formation and composition:</b>  <i>Filtration</i> — effects of blood, capsular and osmotic pressure on GFR.  <i>Tubular reabsorption &amp; secretion</i> — Na<sup>+</sup> movement, influence of aldosterone, water reabsorption, effect of ADH, brief mention of H<sup>+</sup> manipulation.  Urine composition and pH range.  <i>Other kidney functions</i> — BP and erythropoiesis influence (details in cardiovascular section).  <b>Micturition:</b>  Muscles involved and neural control.</p>
10	<p><b>Digestive System</b>  General structure of alimentary canal and relationship of accessory organs.  <i>Mouth</i> — hard and soft palates, deciduous and permanent dentition, parotid, submaxillary and sublingual glands and ducts, tongue, uvula.  <i>Oropharynx, Laryngopharynx, Esophagus</i>  <i>Stomach</i> — blood supply and drainage.  — cardiac and pyloric sphincters, fundus, body, pylorus, rugae, greater and lesser curvatures, greater and lesser omenta.  <i>Small intestine</i> — blood supply and drainage  — duodenum, jejunum, ileum, Peyer's Patches, villi, ileocecal valve, Meckel's diverticulum  <i>Liver</i> — blood supply and drainage  — segmental anatomy  — biliary system  — biliary tree, hepatic, cystic and common bile ducts, ampulla of Vater, sphincter of Oddi  <i>Pancreas</i> — pancreatic duct and accessory duct, relationship to biliary system.  <i>Large intestine</i> — blood supply and drainage  — cecum, vermiform appendix, ascending, transverse and descending colon, hepatic (R. colonic) and splenic (L. colonic) flexures, sigmoid colon, rectum, anal canal, anal columns, anus, internal and external sphincters, haustra, taenia coli.  — relationship of alimentary canal and accessory organs to peritoneum.  <i>Digestion &amp; absorption</i> — definition of mechanical and chemical digestion  — role of teeth, tongue, amylase  — deglutition  — digestion in stomach, composition and function of "gastric juice"  — digestion in small intestine, composition and function of pancreatic secretions, bile, intestinal wall secretions, factors affecting contraction of gall bladder. End products of protein, carbohydrate and lipid digestion, absorption of amino acids, monosaccharides and glycerol and fatty acids into hepatic portal and lymphatic systems.  <i>Elimination</i> — formation of fecal material and defecation.</p>