



BRITISH COLUMBIA INSTITUTE OF TECHNOLOGY

Operating Unit: Health Sciences

Program: Medical Radiography

Option:

## Course Outline

**BHSC 2213**

**Anatomy and Physiology 2**

**Start Date:** September, 1998

**End Date:** December, 1998

**Course Credits:** 2.0

**Term/Level:** 2

**Total Hours:** 36

**Total Weeks:** 10

**Hours/Week:** **Lecture:** 3.5 (average)

### Prerequisites

### BHSC 2213 is a Prerequisite for:

**Course No. Course Name**

**Course No. Course Name**

BHSC 1113 Anatomy and Physiology 1  
(or equivalent)

MRAD 2204/3304

### Course Calendar Description

BHSC 2213 Anatomy and Physiology 2 (MRAD) — Introduces 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 digestive, cardiovascular, lymphatic, nervous, endocrine, and reproductive. (adapted)

### Course Goals

- to provide a basic understanding of human anatomy and physiology that can be applied to other courses in the radiography program.
- to give the student sufficient background to function effectively in the clinical setting when confronted with both commonly encountered and unfamiliar physiologic and pathologic states.

### Evaluation

First Midterm (Oct. 6)	35%	(covers Digestive and most of Cardiovascular Systems)
Second Midterm (Nov. 3 and 17)	25%	(covers remainder of Cardiovascular/Lymphatics and Nervous System)
Final Exam	40%	(covers Endocrine and Reproductive Systems and reviews relational anatomy for previous organ systems covered this term)
<b>TOTAL</b>	<b>100%</b>	

## Course Learning Outcomes/Competencies

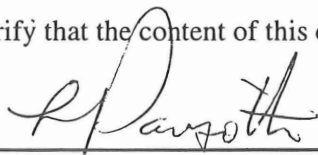
On successful completion of this course the student should be able to:

1. describe the general structure of the alimentary tract and the relationships of accessory organs, together with peritoneal relationships.
2. describe the functions of the various parts of the alimentary tract in terms of mechanical and chemical digestion and absorption.
3. describe the circulatory system in terms of the structure and function of the two circulations, the vascular structures and their functions, and the physiology of blood flow.
4. describe the location, structure, and function of the heart, including the cardiac cycle, and myocardial blood supply and drainage.
5. relate the systolic and diastolic arterial blood pressure to the mechanical events of the cardiac cycle.
6. describe the composition of blood, the function of the formed elements, erythropoiesis and r.b.c. destruction.
7. differentiate between features of the fetal circulation, and that of the neonate.
8. describe the lymphatic system according to its structure and function, including formation and composition of lymph and its drainage paths.
9. describe the major structures of the nervous system (brain, spinal cord and spinal and cranial nerves) including the various types of protection afforded the C.N.S.
10. identify the brain ventricles in a variety of different planes and sections.
11. relate the parts of the C.N.S. to the enclosing bones of the skull and the spinal column.
12. describe the glands of the endocrine system in terms of their location, the hormones produced, and the effect on target organs.
13. describe the major components of the female and male reproductive systems, and their functions.
14. identify the relationships between organs of the female and male pelvis, and recognize structures from their location and sectional appearance.

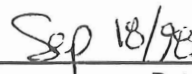
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## Course Content Verification

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



Program Head/Chief Instructor



Date



**BRITISH COLUMBIA INSTITUTE OF TECHNOLOGY**

Operating Unit: Health Sciences  
Program: Medical Radiography  
Option:

**BHSC 2213  
Anatomy and Physiology 2**

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**Instructor(s)**

Gordon Handford

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E-mail Address: ghandfor@bcit.bc.ca

Wed. 11:30

Thurs. 11:30 – 1:30

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**Learning Resources**

**Required:**

*Principles of Anatomy and Physiology*, Tortora and Grabowski, 8th Ed., 1996. Harper Collins.  
Access to a good medical dictionary.

**Recommended:**

*Human Anatomy and Physiology*, 3rd edition, 1995, Benjamin/Cummings Publishing Co. Inc., Redwood City, California.

*Clinically-oriented Anatomy* by K. Moore.

*Human Physiology*, 5th Ed., 1990. A.J. Vander, J.H. Sherman and D.S. Luciano; published by McGraw-Hill Publishing Co., New York.

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**BCIT Policy Information for Students**

1. Students will participate in a verbal and written (anonymous) review of the course at midterm and at the end of term. These reviews will focus on the course content and structure, instructor performance, contradictions and congruences between course goals, content and process.
  2. Attendance is required in this course as much of the material presented in lecture will not be available in other formats. If students are absent for more than 10% of the planned activities without a documented medical reason, they will not meet the attendance requirement of the course and may be withdrawn from the course. (See BCIT policy re attendance.)
  3. Student written work is assumed to be original and specific to this course. Plagiarism, the presentation of other's written work as one's own, will not be tolerated. (See BCIT policy re plagiarism.) The same applies to any aid that gives a student an unfair advantage in a written examination. (See BCIT policy re cheating.)
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**Assignment Details**

Brief exercises may be assigned during the term to help students learn difficult conceptual or relational material. Their contribution to the term grade will be established by agreement.



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Schedule

BHSC 2213

Anatomy and Physiology 2

Review of GI tract general structure, structure and role of esophagus

Week of/ Number	Outcome/Material Covered
1 and 2	<p><b>Stomach</b> Blood supply and drainage. Cardiac and pyloric sphincters, fundus, body, pylorus, rugae, greater and lesser curvatures, greater and lesser omenta. Relationship of alimentary canal and accessory organs to peritoneum.</p> <p><b>Small Intestine</b> Blood supply and drainage, duodenum, jejunum, ileum, Peyer's Patches, villi, ileocecal valve, Meckel's diverticulum.</p> <p><b>Liver</b> Blood supply and drainage, segmental anatomy, biliary system (biliary tree, hepatic, cystic, and common bile ducts, ampulla of Vater, sphincter of Oddi).</p> <p><b>Pancreas</b> Pancreatic duct and accessory duct, relationship to biliary system, digestive and endocrine roles.</p> <p><b>Large Intestine</b> 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.</p> <p><b>Digestion and Absorption</b> 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.</p> <p><b>Elimination</b> Formation of fecal material and defecation.</p>

Week of/ Number	Outcome/Material Covered
3 – 5	<p><b>Cardiovascular System</b></p> <p>Overall design — arteries, veins, heart, pulmonary and systematic circulations.</p> <p>Heart location, anatomy, and related structures — refer to handout sheet.</p> <p>The cardiac cycle — electrical and mechanical events.</p> <p>Arterial system — structure of elastic and muscular arteries, and arterioles. Capillary structure, movement of materials through cap. walls.</p> <p>Venous system — structure of veins, valves.</p> <p>Location of arteries and veins identified in handout sheet.</p> <p>Fetal circulation and changes at birth.</p> <p>Composition of blood — erythrocytes, formation and destruction. Brief description of the leukocytes and platelets, and sites of formation.</p>
5	<p><b>Lymphatic System</b></p> <p>Basic structure — lymph capillaries, lymphatics, R. lymphatic and thoracic ducts, cisterna chyli. Lymph node structure, cervical, axillary, inguinal, popliteal, periaortic, tracheobronchial nodes. Other lymphoid tissue — spleen, palatine, pharyngeal and lingual tonsils, thymus, “Peyer’s Patches”.</p> <p>Functions of lymphatic system.</p>
6 and 7	<p><b>Nervous System</b></p> <p>Types of nervous tissue cells — neuroglia, neurons</p> <p>C.N.S. — Gross anatomy and functions  Brain, spinal cord, and related structures — as detailed in handout sheet.  C.N.S. protection — bony protection, the meninges, ventricular system, production and reabsorption of C.S.F.</p> <p>P.N.S. — Gross anatomy and function  Somatic nervous system  Cranial nerves — names, numbers, functions, and associated cranial foramina.  Spinal nerves — numbers and spinal regions from which they arise.  Cervical, brachial, lumbar and sacral plexuses, phrenic, ulnar, brachial, sciatic and femoral nerves.  Autonomic nervous system  Structure of the two divisions, and examples of their antagonistic actions.</p>

Week of/ Number	Outcome/Material Covered
8	<p><b>Endocrine System</b> (2 hours)</p> <p>The following tissues and organs are considered briefly with respect to location, major hormones produced, and effects on target organs: pancreas, thyroid, parathyroids, adrenals (cortex and medulla), thymus, pineal, ant. and post. pituitary. (Gonads are covered in reproductive systems.)</p>
8 and 9	<p><b>Reproductive Systems</b></p> <p>Female structure and function</p> <ul style="list-style-type: none"> <li>Anatomy as outlined on handout sheet.</li> <li>Anatomic relationships of organs in pelvic cavity.</li> <li>Ova production and cycle — effects of F.S.H., estrogens, L.H. on development and ovulation.</li> <li>Uterine changes — effects of progesterone and estrogens. Menstruation. Changes in pregnancy.</li> <li>Breast structure, cyclical changes and changes in pregnancy. Control of lactation.</li> </ul> <p>Male structure and function</p> <ul style="list-style-type: none"> <li>Structures as outlined on handout sheet.</li> <li>Anatomic relationships of organs.</li> <li>Role of testosterone, seminal vesicles, bulbourethral and prostate glands, in sperm production, maturation and semen production.</li> </ul>