British Columbia Institute of Technology

Course Outline

Course	BHSC 1113 ANATOMY and PHYSIOLOGY 1		
Instructor(s)	D.W. Martin	**Office**	SW3 3085
Office hours	as arranged with students	**Local**	8226

Date taught Jan. May, 1996

Term	1st	**No. of weeks**	16	**Hrs./wk**	2	**Credit**	2.5
Total hrs.	32	**Lecture/wk**	2	**Lab./wk**	0		
		Tutorial/wk	0	**Practicum**	0		

Offered by:
School Health
department [illegible]
Program Basic Health Sciences

Taught to:
School Health
Program Medical Radiography
Option N/A

Prerequisites: None

Requisite for: BHSC 2213

Prepared by: D.W. Martin

Associate Dean:

Description/summary

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 phsyiology course, BHSC 2213.

Goal(s)

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

Outcomes

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

TOPIC 1

Outcome

Suboutcome 1 (optional)

Content elaboration (optional)

1. Use correct terminology to describe the location & relationships of structures 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 & yellow marrow in children & adults
   e. intramembranous & endochondral ossification of a long bone & and the hormonal factors affecting growth
   f. the structure of a synovial joint & movements at such joints.
3. identify the components of the integument & their functions.
4. identify the path that inspired air takes from the external nares to alveoli.
5. describe the lungs in terms of position in the thoracic cavity & relationships to pleura, fissures, lobes & bronchopulmonary segments.
6. explain the muscular activity & associated pressure changes which occur during one respiratory cycle.

Outcomes (cont.)

7. describe pulmonary circulation in terms of the arrangement of blood vessels, the transport of respiratory gases, & gaseous exchange.

8. describe the basic structure of the urinary system, to the nephron level.

9. use the terms filtration, secretion, & reabsorption, to describe urine formation & composition.

10. describe the anatomy of the lower urinary tract & the regulation of its activity.

11. describe the general structure of the alimentary tract & the relationship of accessory organs, together with peritoneal relationships.

12. describe the functions of the various parts of the alimentary tract in terms of mechanical & chemical digestion, & absorption.

Delivery methods (e.g., lecture, lab, video, etc.)

lectures: 2 x 50 minutes per week throughout the term.

Evaluation

2 midterm exams. (each 1 hour)	60%
1 final examination (2 hours) (comprehensive)	40%
TOTAL	100%

Texts

Required:

PRINCIPLES OF ANATOMY & PHYSIOLOGY, Tortora & Grabowski, 8th Ed. 1995. 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 & Physiology books:

These are located in call number group of QP 34.
e.g. Textbook of Medical Physiology, Guyton. QP34.5 G 9

Equipment

Required:

None

Recommended:

Course notes

FUNCTIONAL BODY ORGANIZATION (2 hrs)

organization in terms of cells, tissues, organs, & systems.

brief introduction to homeostasis, examples of nervous & hormonal feed-back mechanisms.

body cavities, gross contents, quadrants & regions of abdominopelvic cavity.

surface landmarks of walls of body cavities.

Examples of sectional relationships of cavity contents. (more details are given during discussion of the body systems).

SKELETAL SYSTEM (6 hrs)

Functions - support, protection, calcium storage, hemopoiesis, movement.

Types of bones - long, short, flat, irregular, sesamoid, wormian.

Description of a long bone - epiphysis, diaphysis, metaphysis, articular cartilage, cancellous & compact bone, periosteum, endosteum, marrow cavity, lamellae, Haversian & Volkmann's canals, canaliculi, Sharpey's fibres, nutrient foramina.

Bone marrow - location of red & yellow marrow in non-adults & adults.

Development & growth of bone - intramembranous ossification, endochondral ossification of a long bone - primary & secondary ossification centres, effects of diet, somatotropic hormones, androgens & estrogens.

Joints - brief description of synarthroses, amphiarthroses, diarthroses, structure of a generalized synovial joint - joint cavity, synovial membrane & fluid, bursae, ligaments, menisci, joint capsule.

Movements - adduction, abduction, flexion, extension, supination, pronation, rotation, circumduction, inversion, eversion, protraction, retraction, dorsi-flexion, hyperextension.

INTEGUMENT (1 Hr)

Epidermis - germinal layer, melanocytes, keratinization.

Dermis - blood vessels, sense receptors, sweat & sebaceous glands, hair roots.

Skin functions - protection, body temperature control, sensory organ.

RESPIRATORY SYSTEM (7 Hrs)

Structure - nasal cavities, external & internal nares, septum, turbinates, olfactory epithelium, sinuses(maxillary, frontal, ethmoid, sphenoid), naso- & oropharynx, larynx,(thyroid & cricoid cartilages, epiglottis, vocal cords, glottis), trachea, primary, secondary & tertiary bronchi, bronchioles, alveolar ducts, sacs, & alveoli. "bronchial tree".

Position of lungs, lobes, visceral & parietal pleura, intra-pleural space & fluid, intraalveolar space.

Ventilatory mechanics - inspiratory & expiratory muscles, pressure changes.

Pulmonary circulation - pulmonary arteries & veins, gaseous exchange in alveoli, hemoglobin & oxygen transport.

URINARY SYSTEM (4 Hrs)

Basic structures:

Kidney

blood supply & drainage.

cortex, medulla, renal pyramids, renal columns, calyces, renal pelvis, nephron,(Bowman's capsule, PCT, descending & ascending limbs of Loop of Henle, DCT, afferent & efferent arterioles, glomerulus, peritubular capillaries), collecting duct.

Ureters, urinary bladder, urethra

Urine formation & composition

Filtration - effects of blood, capsular, & osmotic pressures on G.F.R.

Tubular reabsorption & secretion - Na+ movement, influence of aldosterone, water reabsorption, effect of A.D.H, brief mention of H+ manipulation.

Urine compositon & pH range.

Other kidney functions - B.P. & erythropoiesis influence (details in cardiovascular section).

Micturition - muscles involved & neural control.

DIGESTIVE SYSTEM (10 Hrs)

General structure of alimentary canal & relationship of accessory organs.

Mouth - hard & soft palates, deciduous & permanent dentition. parotid, submaxillary, & sublingual glands & ducts, tongue, uvula.

Oropharynx, laryngopharynx, esophagus.

Stomach
Blood supply & drainage

cardiac & pyloric sphincters, fundus, body, pylorus, rugae, greater & lesser curvatures, greater & lesser omenta.

Small intestine
Blood supply & drainage

duodenum, jejunum, ileum, Peyer's Patches, villi, ileocecal valve, Meckel's diverticulum.

Liver
Blood supply & drainage

Segmental anatomy

Biliary system

biliary tree, hepatic, cystic, & common bile ducts, ampulla of Vater, sphincter of Oddi.

Pancreas
Pancreatic duct & accessory duct, relationship to biliary system.

Large intestine
Blood supply & drainage.

cecum, vermiform appendix, ascending, transverse & descending colon, hepatic(R. colonic) & splenic(L .colonic) flexures, sigmoid colon, rectum, anal canal, anal columns, anus, internal & external sphincters, haustra, taenia coli.

Relationship of alimentary canal & accessory organs to peritoneum.

Digestion & absorption

Definition of mechanical & chemical digestion

role of teeth, tongue, amylase.

Deglutition.

digestion in stomach -composition & function of "gastric juice"

digestion in small intestine - composition & function of pancreatic secretions, bile, intestinal wall secretions, factors affecting contraction of gall bladder. End products of protein, carbohydrate & lipid digestion, absorption of amino acids, monosaccharides, & glycerol & fatty acids into hepatic portal & lymphatic systems.

Elimination - formation of fecal material & defecation