

SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY  
SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

COURSE TITLE: HUMAN BIOLOGY  
CODE NO: BIO 104 SEMESTER: ONE  
PROGRAMME: NURSING ASSISTANT  
AUTHOR: LESLIE FOSTER  
DATE: SEPT/93 PREVIOUS OUTLINE DATED: SEPT/92

APPROVED: *Shen Day*  
Dean

*June 23/93*  
Date



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60

TOTAL CREDIT HOURS

PREREQUISITE(S): Acceptance into the Nursing Assistant Programme/  
General Arts & Science

### I. PHILOSOPHY/GOALS:

The structure and function of the human body is the basis for the human biology course. External and internal environmental stimuli which result in biological processes and activities (responses) will be identified. The human body is seen as an adaptive system, constantly adjusting to changes in the environment, in order to maintain a relatively constant state.

This knowledge of environmental stimuli and subsequent adaptive biologic responses will give the student scientific rationales for the theory and practice of nursing. The course also includes basic principles of microbiology, with emphasis on preventing and controlling infection.

### II. STUDENT PERFORMANCE OBJECTIVES:

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

- 1) Describe levels of organization within the human body.
- 2) Describe the:
  - a) structure
  - b) function
  - c) relationship between function and structurefor body organs and systems
- 3) Describe the interdependence of body systems.
- 4) Explain how various body systems maintain biological adaptation.
- 5) For each of the body systems, describe significant developmental changes that occur throughout the life span.
- 6) Describe how micro-organisms exist, grow and multiply.
- 7) Describe how to prevent the transmission of disease-producing micro-organisms.

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**III. TOPICS TO BE COVERED:**

1. Structural organization of the human body - cells, tissues, organs, systems.
2. Integumentary System
3. Skeletal System
4. Muscular System
5. Nervous System
6. Special Senses
7. Endocrine System
8. Circulatory and Lymphatic System
9. Respiratory System
10. Urinary System
11. Gastrointestinal System
12. Reproductive System
13. Characteristics and growth requirements of micro-organisms.
14. Body Defenses against microbial invasion.
15. Methods of bacterial destruction

**IV. INSTRUCTIONAL METHODOLOGY:**

Student learning will be facilitated by lectures, visual presentations, demonstrations/dissections, and independent study assignments.

**V. LEARNING ACTIVITIES**

**REQUIRED RESOURCES**

1.0 Structural Organization of the human body - (cells, tissues, organs, systems)

Upon successful completion of this unit, the students will be able to:

Text: Essentials of Human Anatomy and Physiology Chapter 1  
The A&P Coloring Workbook

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V. LEARNING ACTIVITIES

REQUIRED RESOURCES

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|-----|--|--|
| 1.1 | Define anatomical terms used to describe body directions, surface landmarks and body planes.   | Text: pp. 10-16<br>Workbook: pp. 8-13, #11, 12, 13, 14, 15, 16 |
| 1.2 | Locate major body cavities and list the chief organs in each cavity.   |  |
| 1.3 | Given a list of selected body parts, describe their location using correct anatomical terminology.   | Workbook: p. 12<br># 17  |
| 1.4 | Describe the chemical composition of living matter.  | Text: Chapter 2<br>pp. 36-52                                   |
| 1.5 | Describe the functions of the organic and inorganic constituents of living matter.   | Text: pp. 36-45<br>Workbook: pp. 20-21<br># 12,13,14           |
| 1.6 | Describe the common structural features of cells:<br>a) cell membrane<br>b) cytoplasm<br>c) cytoplasmic organelles<br>d) nucleus<br>e) nuclear membrane<br>f) chromosomes<br>g) DNA; RNA | Text: Chapter 3<br>pp. 56-60<br>Workbook: pp. 25-27<br># 1,2,3 |
| 1.7 | Describe the functions of the above component parts of the cell.   | Text: pp. 56-60  |
| 1.8 | Explain how the individual cell structures contribute to the functions of the cell as a whole.   |  |
| 1.9 | Describe the internal and external cellular environment by defining the following terms:<br>a) interstitial fluid<br>b) intracellular fluid<br>c) extracellular fluid<br>d) homeostasis  | Text: Glossary   |

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REQUIRED RESOURCES

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| 1.10 | Define the following membrane transport processes and give one example of each:<br>a) diffusion<br>b) facilitated diffusion<br>c) filtration<br>d) osmosis<br>e) active transport<br>f) phagocytosis/pinocytosis              | Text: pp. 60-65<br>Workbook: pp. 30-31<br># 6,7,8,9          |
| 1.11 | Define terminology related to membrane transport.<br>a) semi-permeable<br>b) osmotic pressure<br>c) hydrostatic pressure<br>d) isotonic<br>e) hypotonic<br>f) hypertonic<br>g) concentration gradient<br>h) pressure gradient | Text: pp. 60-64  |
| 1.12 | Briefly describe the cell life cycle by defining interphase and cell division.  | Text: p. 65  |
| 1.13 | Define "tissue".  |  |
| 1.14 | List the four primary tissue types and chief sub-categories of each.  | Text: pp. 68-76<br>Workbook: pp. 34-38<br># 15,17,18,19      |
| 1.15 | Briefly describe the functions for each of the primary tissue types.  |  |
| 1.16 | Define "organ".   | Text: Chapter 1, pp. 2-6<br>Workbook: pp. 2-3<br># 5,6,7     |
| 1.17 | Define "system".  |  |
| 1.18 | Name the chief structural components and state the major function for each of the following body systems:<br>a) Integumentary<br>b) Skeletal<br>c) Muscular<br>d) Nervous   | Text: Chapter 1, pp. 3-6<br>Workbook: pp. 2-6<br># 3,4,5,6,7 |

V. LEARNING ACTIVITIES REQUIRED RESOURCES

LEARNING ACTIVITIES	REQUIRED RESOURCES
e) Endocrine f) Special Senses g) Circulatory h) Respiratory i) Urinary j) Gastro-intestinal k) Reproductive	Text: pp. 95-97 Workbook: p. 50, #12
2.0 <u>The Integumentary System</u>	Vocabulary List - Skeletal System
Upon successful completion of this unit, the student will be able to:	Text: Chapter 5 pp. 101-102
2.1 List the major functions of the integumentary system.	Text: Chapter 4 pp. 86-92
2.2 Given a model or diagram of the of the skin, recognize and name the following skin structures: a) epidermis b) dermis c) hair/hair follicle d) sebaceous gland e) sudoriferous gland	Workbook: pp. 43-47 # 1,2,6,8
2.3 Describe the functions of the above skin structures.	Text: pp. 104-107 Workbook: pp. 54-56 # 3,4,6
2.4 Describe how the structures of the skin contribute to the general functions of the skin.	Text: pp. 109-121 Workbook: pp. 56-64, #9
2.5 Describe the role of the skin in temperature regulation.	Chapter 4, pp. 94-96, 394-395 Workbook: pp. 48-49 #10,11
2.6 Describe the location and function of the following body membranes: a) mucous membrane b) serous membrane c) synovial membrane	Text: pp. 121-127 Workbook: pp. 65-74 # 22,23,24,25,26,27,28
2.7 Describe the role of the integumentary system in supporting adaptation.	
3.11 Explain the differences between a male and female pelvis.	

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3.12	Name three major types of articulations (joints).	Text: pp. 127-130 Workbook: pp. 76-77 # 31,32,33
3.13	Compare the movements possible at each type of articulation (joint).	
3.14	Describe the general structure of a diarthrotic joint.	
3.15	Describe the role of the skeletal system in supporting adaptation	
3.16	Describe selected developmental aspects of the skeleton.	Text: p. 134 Workbook: p. 78, #35,36 Review skeletal system Workbook: p. 79, # 37
4.0	<u>The Muscular System</u> Upon successful completion of this unit the student will be able to:	
4.1	Define selected terms related to the muscular system.	Vocabulary List - Muscular System
4.2	Describe the major functions of the muscular system.	Text: pp. 139-140
4.3	Describe three types of muscle tissue and identify where they are found in the body.	Text: pp. 140-142 Workbook: pp. 81-83, # 1
4.4	Describe the events of muscle cell contraction.	Workbook: p. 86, # 9
4.5	Describe the effects of exercise on muscles.	
4.6	Demonstrate the different types of body movement.	Text: pp. 149-152 Workbook: pp. 86-87, # 10,11
4.7	Given diagrams, charts and a torso model, name and locate selected muscles and state the action of each.	Lab: Class exercise to demonstrate and perform body movements. Identification of muscles using torso, anatomical charts. Text: pp. 154-163. Workbook: pp. 88-96, # 14,15,16,17,18,19,20

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4.8	Describe how the structure of muscle(s) is suited to function.	
4.9	Explain the importance of nerve supply to the functioning of muscle tissue.	
4.10	Describe the role of the muscular system in supporting adaptation.	
4.11	Describe selected developmental aspects of the muscular system.	Text: pp. 163 Workbook: p. 102, # 21 Review Muscular System Workbook p. 102-103, #22
5.0	<u>The Nervous System</u> Upon successful completion of this unit the student will be able to:	
5.1	Define selected terms related to the nervous system.	Vocabulary List - Nervous System
5.2	Describe the general functions of of the nervous system.	Text: p. 172 Workbook: p. 105, # 1
5.3	Describe the general structure of a neuron.	Text: pp. 174-183 Workbook: pp. 106-112, # 4,5,6,7,8,10,11
5.4	State the function of neurons.	
5.5	Classify neurons according to function.	
5.6	Describe a nerve impulse and how it is conducted from one neuron to another.	
5.7	Define reflex arc and list its elements.	
5.8	List the parts of the central nervous system.	
5.9	Given a model, diagram or specimen, locate selected parts of the brain and spinal cord.	Lab: Dissection of the Brain. Examination of torso, model, anatomical charts.

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5.10	Describe the functions of the selected parts of the brain and spinal cord.	Text: pp. 183-194 Workbook: pp. 112-120, # 13,14,15,16,17,18,20, 21,22,23,24
5.11	Explain how the brain and spinal cord are protected.	Text: pp. 188-191
5.12	Describe the formation and function of cerebrospinal fluid.	
5.13	Describe the structure of a nerve within the peripheral nervous system.	Text: pp. 194-198 Workbook: pp. 120-123, # 29,30,31,33
5.14	Given a diagram, model or chart, name and locate the four major nerve plexuses with the major nerves of each.	Lab: Identification of selected nerves using models, torso, anatomical charts.
5.15	Given a diagram, model or chart, identify the cranial nerves and list the major functions of each.	
5.16	Explain the function of the sympathetic and parasympathetic divisions of the autonomic nervous system and state the effect of each on the major body organs.	Text: pp. 199-205 Workbook: pp. 123-124, # 34,35
5.17	Describe how various structures within the nervous system are suited to their function.	
5.18	Describe the role of the nervous system in supporting adaptation.	
5.19	Describe selected developmental aspects of the nervous system.	Text: p. 208-209 Review Workbook: pp. 124 # 37,38
6.0	<u>The Special Senses</u> Upon successful completion of this unit the student will be able to:	

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6.1	Given models, charts or diagrams, identify and locate the receptors for each of the special senses: i) eye ii) ear iii) nose iv) tongue v) skin	Text: pp. 216-234 Workbook: pp. 127-139 # 1,2,4,5,6,7,8,9,13,14, 15,16,17,18,19,20,21,22 23,24,25
6.2	State the function for each receptor.	
6.3	Describe the structures and related functions of selected parts of the: i) eye ii) ear iii) nose (in relation to smell) iv) tongue (in relation to taste) v) skin (in relation to touch)	Lab: Identification of selected structures using torso, models, anatomical charts, eye specimens.
6.4	For each of the above sensory organs, trace the afferent pathway followed by sensory impulses to their corresponding sensory areas in the brain.	
6.5	Describe the role of the special senses in supporting adaptation.	
6.6	Describe selected developmental aspects of the special senses.	Text, p. 234-235 Workbook p. 139, #26 Review workbook p. 140, # 27
7.0	<u>The Endocrine System</u> Upon successful completion of this unit the student will be able to:	
7.1	Define selected terms related to the endocrine system.	Vocabulary List - Endocrine System
7.2	Given a torso, charts or diagrams identify the major endocrine glands.	
7.3	State the general function of endocrine glands.	Text: pp. 239-241 Workbook - pp. 143-148 # 2,3,4,5,6,7,8

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7.4	List hormones produced by endocrine glands and discuss their general functions.	
7.5	Describe the effects of hypo and hypersecretion of selected hormones.	
7.6	Describe how the secretion of hormones is regulated.	
7.7	Describe the role of the endocrine system in supporting adaptation.	
7.8	Describe the relationship between the nervous system and the endocrine system.	
7.9	Describe selected developmental aspects of the endocrine system.	Text p. 259 Workbook: p. 148, #10 Review: Workbook p. 149, # 11
8.0	<u>Circulatory and Lymphatic System</u> Upon successful completion of this unit the student will be able to:	
8.1	Define selected terms related to the circulatory and lymphatic systems.	Vocabulary List - Circulatory System
8.2	Describe the composition of blood.	Text pp. 264-270 Workbook: pp. 151-155 # 1,2,5
8.3	Describe the basic function of blood.	
8.4	Review the role of the skeletal system in hemopoiesis.	
8.5	Describe the blood clotting process.	Text: p. 271-272 Workbook: p. 156, # 6,7
8.6	Describe the ABO and Rh blood groups and explain their significance in relation to blood transfusions.	Text: p. 273-275 Workbook - p. 157, # 8,9,10,11

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| 8.7  | Describe the location of the heart and identify its major anatomical areas on charts, diagrams, models and specimens.   | Text: pp. 283-287<br>Workbook: pp. 161-164<br># 1,2,3,4<br>Lab: dissection of heart specimen.<br>Identification of selected structures on specimens, models, torso, anatomical charts |
| 8.8  | Relate the structural features of the heart to its function.  |   |
| 8.9  | Trace the pathway of blood through the heart and lungs.   |   |
| 8.10 | Describe the conduction system of the heart.  | Text: p. 287-289<br>Workbook: p. 164, # 5   |
| 8.11 | Briefly describe the "cardiac cycle".   |   |
| 8.12 | Compare and contrast the structure and function of arteries, veins and capillaries.   | Text: pp. 292-293<br>Workbook: p. 167,<br># 12,13,14  |
| 8.13 | Given a torso, diagrams, or charts locate and identify selected arteries and veins  | Text: pp. 294-298<br>Workbook: pp. 168-171<br># 16,17,18  |
| 8.14 | Describe<br>i) systemic circulation<br>ii) pulmonary circulation<br>iii) portal circulation<br>iv) fetal circulation  | Text: pp. 298-300<br>Workbook: pp. 173-174<br># 19,20,22,23,24,25,26,<br>28.  |
| 8.15 | Describe the structure, location and function of the following parts of the lymphatic system.<br>i) capillaries<br>ii) vessels<br>iii) ducts<br>iv) nodes<br>v) other lymphoid organs | Text: 309-311<br>Workbook: pp. 178-179<br># 29,30   |

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8.16	Describe the significance of lymphatic circulation.	
8.17	Describe the role of the circulatory and lymphatic systems in supporting adaptation.	
8.18	Describe selected developmental aspects of the circulatory system.	Text: pp. 277,312 Workbook: p. 158, # 12 p. 179, # 31 Review, Workbook p. 159 # 13, p. 180 # 32
9.0	<u>The Respiratory System</u> Upon successful completion of this unit the student will be able to:	
9.1	Define selected terms related to the respiratory system.	Vocabulary - Respiratory System.
9.2	State the function of the respiratory system.	Text: p. 344
9.3	Given a torso, chart or diagram locate the following structures of the respiratory system. i) nose ii) pharynx iii) larynx iv) trachea v) bronchi vi) lungs (alveoli)	Text: pp. 344-349 Workbook: p. 199 # 1,2,3,4,5,6,7,8,9 Lab: Identify selected structures using torso, anatomical charts.
9.4	Describe how the above structures of the respiratory system are related to their function.	Text: pp. 344-349
9.5	Describe briefly the mechanism of breathing.	Text: pp. 351-353 Workbook: pp. 206-208
9.6	Describe the process of gas exchanges in the lungs (external respiration) and tissues (internal respiration)	Text: pp. 354-356 Workbook: pp. 209 # 17,18,19

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| 9.7  | Briefly describe how gases are transported in the blood.  |  |
| 9.8  | Briefly describe the control of respirations.   | Text: pp. 356-357<br>Workbook: pp. 210, #20  |
| 9.9  | Describe the role of the respiratory system in supporting adaptation.   |  |
| 9.10 | Describe selected developmental aspects of the respiratory system.  | Text: pp. 360-361<br>Workbook: p. 211, #22,23<br>Review workbook: p. 212-213. #24  |
| 10.0 | <u>The Digestive System</u><br>Upon successful completion of this unit the student will be able to:   |  |
| 10.1 | Define selected terms related to the digestive system.  | Vocabulary List - Digestive System.  |
| 10.2 | State the functions of the digestive system.  | Text: p. 366   |
| 10.3 | Given a torso, charts or diagrams locate and identify the organs of the alimentary canal and the accessory digestive organs.  | Text: pp. 366-367<br>Workbook: pp. 215-216<br># 1,2,3,4,5,6,7<br>Lab: Identify selected structures using torso, anatomical charts. |
| 10.4 | Describe the structure, in relation to function of the organs of the digestive system.<br>i) mouth (oral cavity)<br>ii) pharynx<br>iii) esophagus<br>iv) stomach<br>v) small intestine<br>vi) large intestine |  |

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| 10.5 Describe the structure and function of the accessory organs of the digestive system.<br>i) teeth<br>ii) salivary glands<br>iii) liver<br>iv) gall bladder<br>v) pancreas                                   | Text: pp. 375-377<br>Workbook: pp. 224-226<br># 9,10,12                 |
| 10.6 Describe the digestive processes as they relate to the organs and accessory organs of the digestive system.<br>i) ingestion<br>ii) food breakdown<br>iii) food movement<br>iv) absorption<br>v) defecation | Text: pp. 378-387<br>Workbook: pp. 226-229<br># 13,14,15,16,17,18       |
| 10.7 Describe the circulation of absorbed food stuffs in blood and lymphatics.  |   |
| 10.8 Describe the normal composition and characteristics of feces.  |   |
| 10.9 Briefly describe the metabolism of carbohydrates, fats and proteins.   | Text: pp. 387-392<br>Workbook: pp. 230-232<br># 19,20,21,22             |
| 10.10 Describe the role of the liver in metabolism.   |   |
| 10.11 Explain the importance of energy balance in the body.   |   |
| 10.12 Describe the relationship of foods to body heat.  | Text: pp. 393-395   |
| 10.13 Review body temperature regulation.   |   |
| 10.14 Describe the role of the digestive system in supporting adaptation.   |   |
| 10.15 Describe selected developmental aspects of the digestive system.  | Text: 395-396<br>Workbook: 233, #24<br>Review workbook: p. 234,<br># 25 |

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V. LEARNING ACTIVITIES REQUIRED RESOURCES

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- 11.0 The Urinary System  
Upon successful completion of this unit the student will be able to:
- 11.1 Define selected terms related to the urinary system. Vocabulary List - Urinary System.
- 11.2 State the basic function of the urinary system. Text: pp. 401-402
- 11.3 Given a torso, charts, or diagrams locate and identify the organs of the urinary system. Text: 402-403  
Workbook: pp. 238-239 # 2  
Lab: Identify selected structures using torso, anatomical charts.
- 11.4 Describe the general structure and related functions of the organs of the urinary system.  
i) kidney  
ii) ureters  
iii) urinary bladder  
iv) urethra Text: pp. 402-403, 414-416  
Workbook: pp. 238-240, # 3,4
- 11.5 Describe the structures and function of the nephron. Text: pp. 404-406  
Workbook: pp. 240-242, # 5,6,7
- 11.6 Describe the process of urine formation.  
i) filtration  
ii) tubular reabsorption  
iii) tubular secretion Text: pp. 406-408  
Workbook: pp. 243-244 # 8,9,10,11,12,13,14, 15,17
- 11.7 Describe the process of micturition.
- 11.8 Explain the effect of aldosterone and A.D.H. on the kidneys Text: pp. 408-411
- 11.9 Describe the characteristics of urine. Text: pp. 411-412
- 11.10 Describe the role of the urinary system in supporting adaptation.

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| 11.11 Describe selected developmental aspects of the urinary system.   | Text: p. 417-418<br>Workbook: pp. 247, # 19<br>Review workbook: p. 248,<br># 20 |
| 12.0 <u>The Reproductive System</u><br>Upon successful completion of this unit the student will be able to:  |   |
| 12.1 Define selected terms related to the reproductive system.   | Vocabulary List -<br>Reproductive System  |
| 12.2 State the basic functions of the reproductive system.   | Text: pp. 421-422   |
| 12.3 Given a torso, charts or diagrams locate and identify the organs of the male and female reproductive systems.   | Lab: Identify selected structures using torso and anatomical charts             |
| 12.4 Describe the structure and related functions of the male organs of reproduction.<br>i) scrotum<br>ii) testes<br>iii) epididymis<br>iv) vas deferens<br>v) seminal vesicle<br>vi) ejaculatory duct<br>vii) prostate gland<br>viii) bulbourethral glands<br>ix) urethra | Text: pp. 422-428<br>Workbook: pp. 251<br># 1,2,3,4,5,7,8                       |
| 12.5 Name the endocrine and exocrine products of the testes.   |   |
| 12.6 Describe the composition and production of seminal fluid.   | Text: pp. 427-428   |
| 12.7 Describe the hormonal control of male sex characteristics and reproductive function.  |   |
| 12.8 Describe the nervous control of the male reproductive organs.   |   |

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| 12.9 Describe the structure and related function of sperm.  | Text: pp. 423-424  |
| 12.10 Describe the structure and related functions of the female organs of reproduction.<br>i) vagina<br>ii) Bartholin's (greater vestibular) glands<br>iii) uterus<br>iv) uterine (fallopian) tubes<br>v) ovaries<br>vi) vulva and perineum<br>vii) mammary glands | Text: pp. 429-435<br>Workbook: pp. 257-264<br># 9,11,12,13,14,15,16,19                     |
| 12.11 Describe how the uterus and ovaries are supported in the pelvic cavity.   |  |
| 12.12 Describe the structure and related function of the ova.   |  |
| 12.13 Describe the hormonal control of the female sex characteristics and reproductive function.  | Workbook: p. 262, #17,18   |
| 12.14 Describe the phases and controls of the menstrual cycle.  |  |
| 12.15 Describe the nervous control of the female reproductive organs.   |  |
| 12.16 Describe the role of the reproductive system in supporting adaptation.  |  |
| 12.17 Describe selected developmental aspects of the reproductive system.   | Text: p. 442<br>Workbook: p. 269, # 31<br>Review workbook:<br>p. 270 # 32                  |
| 13.0 <u>Microbiology</u><br>Upon successful completion of this unit the student will be able to:  |  |
| 13.1 Define the selected words associated with microbiology.  | Consult a Microbiology text from the College or other library to complete vocabulary list. |

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13.2	Briefly define the following classifications of parasites & organisms. i) bacteria ii) rickettsiae iii) viruses iv) fungi (yeasts & molds) v) protozoa vi) helminths vii) arthropods	Complete self-study workbook for Microbiology followed by teacher summary & discussion.  View videos- <u>Principles of Microbiology</u> Bacteria Part I, Part II, Viruses.
13.3	List 1 example of a disease or condition caused by the above types of organisms.	
13.4	Describe the sub-types of bacteria according to shape.	
13.5	Describe the general characteristics of a bacterial cell.	
13.6	Describe the growth requirements of most bacteria.	
13.7	State beneficial effects of non-pathogenic bacteria.	
13.8	State the effect of pathogenic bacteria on the body.	
13.9	Describe the normal flora of the human body in terms of: i) benefits of body flora ii) potential hazard of body flora iii) location of normal flora	
13.10	Describe the general characteristics of viruses.	
13.11	State reasons why viruses are difficult to destroy.	
13.12	List examples of common diseases caused by viruses.	
13.13	Describe beneficial and harmful activities of yeasts & molds.	

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V. EVALUATION LEARNING ACTIVITIES

REQUIRED RESOURCES

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- 13.14 Describe beneficial and harmful activities of protozoa.
  - 13.15 Describe parasitic worms which cause disease.
  - 13.16 Describe transmission & portals of entry & exit of microorganisms.
  - 13.17 Explain the criteria important in determining if infection will follow microbial invasion.
    - i) number of organisms
    - ii) virulence of organisms
    - iii) adaptive responses of host
  - 13.18 Explain the adaptive responses of the host by describing the body's three main lines of defense against pathogens.
  - 13.19 Explain "culture & sensitivity".
  - 13.20 Explain "drug resistance".
  - 13.21 Explain common diagnostic tests which confirm presence of pathogens.
  - 13.22 Describe the methods of assisting man in adapting to microorganisms.
    - i) physical agents
      - a) mechanical
      - b) heat
      - c) miscellaneous
    - ii) chemical agents
      - a) disinfectants & antiseptics
      - b) chemotherapeutic agents

Class presentations
  - 13.23 Describe environmental use & control of microorganisms related to:
    - i) air
    - ii) water and sewage
    - iii) milk
    - iv) food
    - v) health care agencies
    - vi) communities

Class presentations

Students who miss scheduled tests during the semester will not be allowed to write on another day. They will be allowed to take up the test with the other students.

If the teacher has been notified of your absence for the test, as per policy stated above, the mark received on the final exam will be assigned for the missed test.

## 2. Supplemental Examinations

A supplemental examination may be offered in this course at the discretion of the teacher subject to the following criteria:

- a) The student must have attended at least 60% of the biology classes.
  - b) The student must have received at least 50% on the final examination. The entire semester's course material will be tested.
  - c) The student must have written at least four (4) of the seven (7) tests and achieved a passing grade of 60% on each.
  - d) Multiple choice questions, short answer questions and diagrams to be labelled will be used in the supplemental examination.
  - e) The final grade for the semester will be based solely on the supplemental examination but the grade achieved will not be higher than a "C". The term marks will not be averaged in with the supplemental examination mark.
  - f) **There will only be one supplemental examination allowed for this course.**
  - g) If you are eligible to write, please inform the teacher as soon as possible if you are choosing to write the supplemental examination or not.
3. Attendance will be taken into consideration for borderline marks.
  4. Extra handouts may be given out during class time. If you are absent, make sure you ask someone to pick up the handout for you. Handouts will not be available after class or on other days.
  5. Evaluation of this course will be done mid-term.
  6. Tests remain the property of Sault College.

HUMAN BIOLOGY

BIO 104

Course Name

Code No.

**VII. REQUIRED STUDENT RESOURCES**

Marieb, Elaine N., Essentials of Human Anatomy and Physiology (3rd Edition), Benjamin/Cummings Publishing Company Ltd., Redwood City, California, 1991.

Marieb, Elaine N., The A&P Coloring Workbook - A Complete Study Guide (3rd Edition), Benjamin/Cummings Publishing Company Ltd., Redwood City, California, 1991.

2 pairs of disposable gloves

**VIII. ADDITIONAL RESOURCE MATERIALS AVAILABLE IN THE COLLEGE LIBRARY BOOK SECTION: (title, publisher, edition, date, library call number if applicable)**

Several additional Biology/Physiology and Microbiology books are available in the Library.

**IX. SUGGESTED MICROBIOLOGY REFERENCES:**

Burton, Gwendolynn R.W., Microbiology for the Health Sciences, Third Edition, J.B. Lippincott Company, Philadelphia, 1988.

Alcamo, I. Edward, Fundamentals of Microbiology, Third Edition, The Benjamin/Cummings Publishing Company Ltd., Redwood City, California, 1991.

Videos - Principles of Microbiology, Bacteria Part I, Part II, Viruses.

**X. SPECIAL NOTES**

Students with special needs (eg: physical limitations, visual impairments, hearing impairments, learning disabilities) are encouraged to discuss required accommodations confidentially with the instructor.

Your instructor reserves the right to modify the course as he/she deems necessary to meet the needs of students.