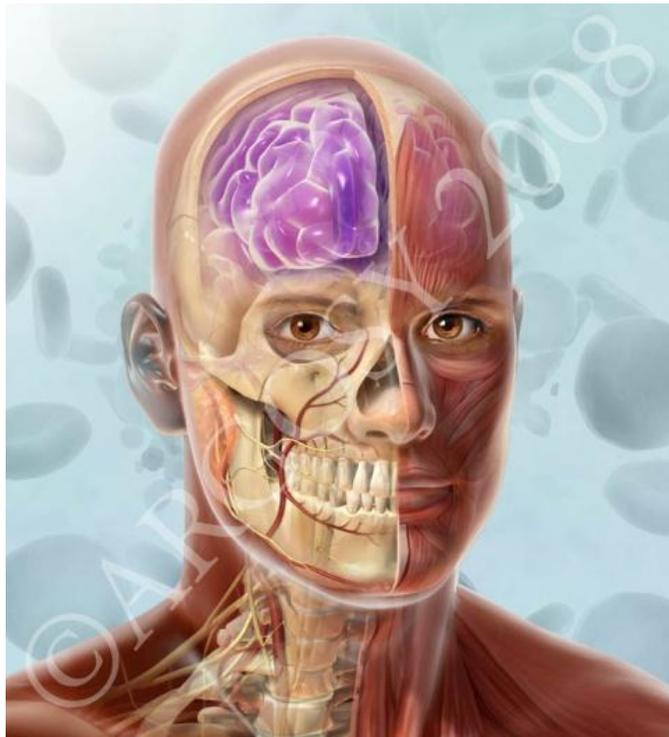


**NURS 118  
ANATOMY AND PHYSIOLOGY II**



**January 8<sup>th</sup>, 2013 to April 16<sup>th</sup>, 2013**

Instructor: Brenda Lays  
Office: Nursing and Allied Health 187H  
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Revised December 2012

# **NURS 118**

## **Anatomy and Physiology II**

### **Course Outline**

NURS 118 – Anatomy and Physiology II (3 credits, 16 weeks, 3-hour lecture)

#### **Calendar Statement**

This is a continuation of the introduction to the structure and function of the human body. This course must be completed prior to year 3 of the program.

#### **Course Description**

NURS 118 is a continuation of NURS 117. This course will continue to introduce students to Anatomy which is the study of the structure and relationships among structures; and Physiology which is the science that describes the normal functions of living organisms with respect to the activities of tissues, organs, and systems. The central focus of the course is to continue to illustrate and integrate structural principles and to build a fundamental knowledge of the correlation between structure and function and of general systems rules.

#### **Tutor information:**

Brenda Lays RN, BScN, MAEd©  
Phone: (780) 791-8906  
Email: Brenda.Lays@Keyano.ca  
Office: 187H

Office Hours: Monday 1400 – 1600h.

## Course Objectives

1. To facilitate a basic understanding of the structure and normal functions of the human body.
2. To be able to use the technical vocabulary and medical terminology related to anatomy in written and verbal communication.
3. To be able to link between structures and normal body function.
4. To be able to integrate the knowledge of anatomy and underlying concepts and principles of physiology to clinical situations.
5. To foster the development of critical thinking skills

## Required Textbook

Martini, F. & Bartholomew, E. (2013). *Essentials of anatomy and physiology* (6<sup>th</sup> ed.). San Francisco, CA: Pearson Education Inc.

## Suggested Textbook

Martini, F. & Bartholomew, E. (2013) *Study Guide: Essentials of Anatomy & Physiology* (6<sup>th</sup> ed.). San Francisco, CA: Pearson Education Inc.

## Lectures

Learning for Nurse 118 will take place utilizing a lecture format. The lectures will be supported with handouts and power point presentations. Students will be given a series of guiding questions that will assist in learning and help focus on important information. Classes will be held once per week on Tuesday for a 3 hour block.

## **Nursing Program Policies**

Please refer to the Keyano College Nursing Program Student Handbook for specific Nursing program policies and to the Keyano College calendar for general College policies.

## **Specialized supports and duty to accommodate**

### ***Disability Support Services: Learner Assistance Program***

If you have a documented disability or you think that you would benefit from some assistance from a Disabilities Counsellor, please call or visit the Disability Supports Office 780-792-5608 to book an appointment (across from the library). Services and accommodations are intended to assist you in your program of study, while maintaining the academic standards of Keyano College. We can be of assistance to you in disclosing your disability to your instructor, providing accommodations, and supporting your overall success at Keyano College.

## **Specialized Supports and Duty to Accommodate**

Specialized Support and Duty to Accommodate are aligned with the office of Disability Support Services: Learner Assistance Program (LAP) guided by federal and provincial human rights legislation and defined by a number of Keyano College policies. Keyano College is obligated by legislation to provide disability-related accommodations to students with identified disabilities to the point of undue hardship.

## **Absence**

If you are ill and unable to write an exam, you must let the instructor know prior to the exam so that other arrangements can be made. Please call Cindy Crich (Nursing & Allied Health Administrative Assistant) at 791-4889. If there is no answer, you must leave a message about the absence. Failure to call prior to the exam will result in a failure for that exam.

## Evaluation Criteria

The midterms and final exam may contain multiple choice and matching questions plus labelling of diagrams.

1. Chapter Quizzes	5%
2. Midterm 1	25%
3. Midterm 2	35%
4. Final Exam	35%
Total =	100%

### Chapter Quizzes - 5% (total)

At the conclusion of each chapter, a quiz to assess student knowledge will be available on Moodle. Each quiz will be available until the closing date and time, shown on the N118 schedule (see page 5). After 1800h on the date shown the quiz will no longer be available to access and a grade of zero will be assigned to any student who has not completed the quiz. All quiz marks will be combined for a final assigned grade and count for 5% of the final course grade.

### Exams

The midterms and final exam may contain multiple choice and matching questions plus labelling of diagrams. They also may contain fill-in-the-blank questions.

	Date	Time	Chapters to be tested
Midterm #1 (25%)	January 29 <sup>th</sup> 2013	1300 - 1600h	19 & 20
Midterm #2 (35%)	March 12 <sup>th</sup> 2013	1830 - 2130h	8 & 9
Final (35%)	April 16 <sup>th</sup> 2013	1830 - 2130h	10, 14, & 17

**In order to successfully complete NURS 118, students must successfully complete all course requirements and receive a passing grade (C-) in the course.**

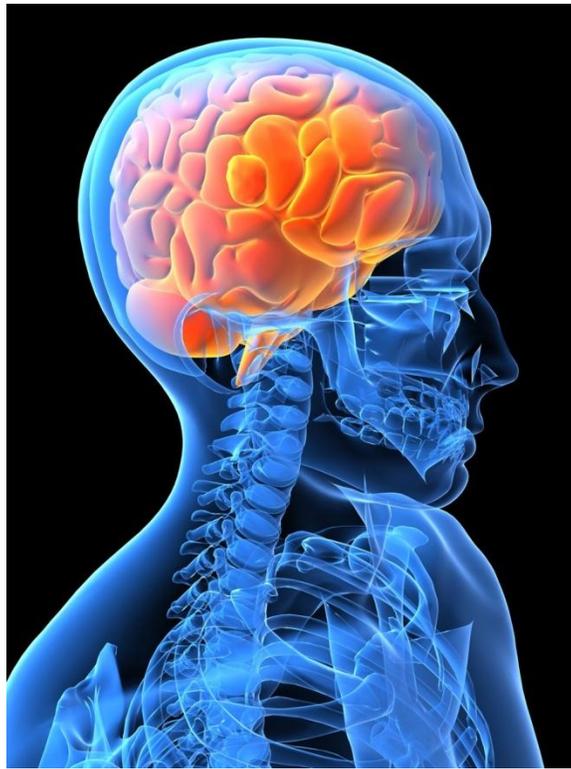
Grading for the exams will be based on the Four-Point Grading Scale as per the Nursing & Allied Health Studies Department Student Handbook (**see Appendix A**).

### NURS 118 2013 Schedule

Week	Date	Class Time	Subject	Required Reading	Quiz Closes at 1800h on
1	January 8	1300 - 1600	Course Orientation and Review		
2	January 15	1300 - 1600	Reproductive system	Chapter 19	Jan 16
3	January 22	1300 - 1600	Development and Inheritance	Chapter 20	Jan 23
4	<b>January 29</b>	<b>1300 -1600</b>	<b>Midterm Exam 1 (25%)</b>		
5	February 5	1300 - 1600	The Nervous System	Chapter 8	
6	February 12	1300 - 1600	The Nervous System	Chapter 8	Feb 13
7	February 19	1300 - 1600	The General and Special Senses	Chapter 9	
<i>February 26 READING WEEK – no class</i>					
9	March 5	1830 – 2130	The General and Special Senses	Chapter 9	Mar 6
10	<b>March 12</b>	<b>1830 – 2130</b>	<b>Midterm Exam 2 (35%)</b>		
11	March 19	1830 – 2130	Endocrine System	Chapter 10	Mar 20
12	March 26	1830 – 2130	Lymphoid System and Immunity	Chapter 14	Mar 27
13	April 2	1830 – 2130	Metabolism and Energetics	Chapter 17	Apr 3
14	April 9	1830 – 2130	A & P knowledge and the role of the nurse		
15	<b>April 16</b>	<b>1830 – 2130</b>	<b>FINAL EXAM (35%)</b>		

**Note: Starting March 5<sup>th</sup> classes will begin at 1830h**

## Areas of Focus Guiding Questions



## Chapter 19 - The Reproductive System

1. Describe the common function of the male and female reproductive systems.
2. Describe the structure and function of the testes and explain the importance of their location in the scrotum.
3. Describe the location, structure, and function of the accessory organs of the male reproductive system.
4. Describe the structure of the penis and note its role in the reproductive process.
5. Describe the location, structure, and function of each of the organs of the female reproductive system.
6. Describe the anatomy of the female external genitalia.
7. Discuss the structure and function of the mammary glands.
8. Define meiosis. Compare and contrast it to mitosis.
9. Outline the events of spermatogenesis.
10. List the elements in semen and explain specific functions of each.
11. Discuss hormonal regulation of testicular function and the physiological effects of testosterone on male reproductive anatomy.
12. Describe the process of oogenesis and compare it to spermatogenesis.
13. Describe the phases of the ovarian cycle, and relate them to events of oogenesis.
14. Describe the regulation of the ovarian and menstrual cycles.
15. Discuss the physiological effects of estrogens and progesterone.
16. Briefly describe the physiology of intercourse.
17. Note the significant events of puberty and menopause.

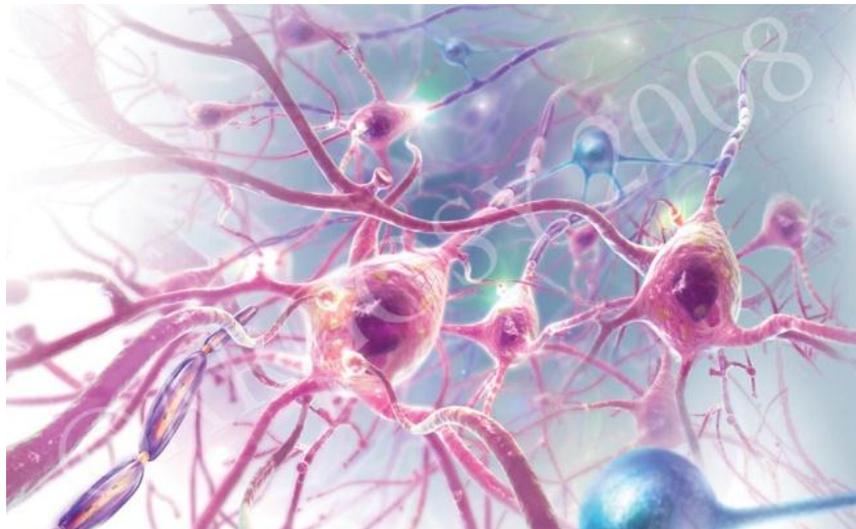


## Chapter 20 – Development and Inheritance

1. Define fertilization.
2. Briefly describe the processes of implantation and placenta formation, and list placental functions.
3. Describe the major developmental changes to the fetus during each trimester.
4. Describe changes in maternal reproductive organs and in cardiovascular, respiratory, and urinary system functioning during pregnancy.
5. Explain how labour is initiated, and describe the three stages of labour.
6. Describe the changes that occur in the fetal circulation after birth
7. Explain how lactation occurs.
8. Differentiate between an embryo and a fetus, neonate, infant, child and adolescent.
9. Relate the basic principles of genetics to the inheritance of human traits.

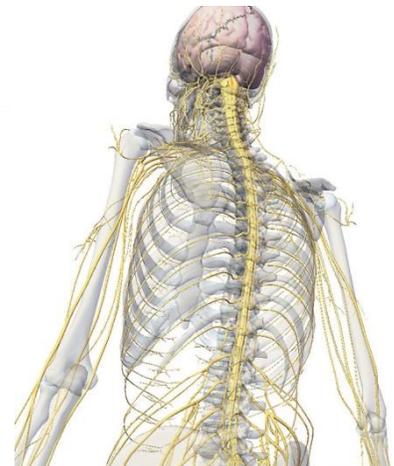
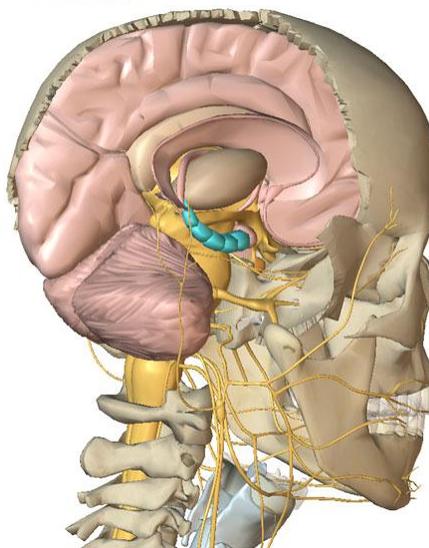
## Chapter 8 The Nervous System

1. List the basic functions of the nervous system.
2. Explain the structural and functional divisions of the nervous system.
3. List the types of supporting cells and cite their functions.
4. Describe the important anatomical regions of a neuron and relate each to a physiological role.
5. Classify neurons structurally and functionally.
6. Explain the importance of the myelin sheath and describe how it is formed in the central and peripheral nervous systems.
7. Differentiate between a nerve and a tract, and between a nucleus and ganglion.
8. Describe the types of neuralgia.
9. Define resting membrane potential and describe its electrochemical basis.
10. Compare and contrast graded and action potentials.
11. Explain how action potentials are generated and propagated along neurons.
12. Define absolute and relative refractory periods.
13. Define saltatory propagation and contrast it to conduction along unmyelinated fibers.
14. Define synapse. Distinguish between electrical and chemical synapses structurally and in their mechanisms of information transmission.
15. Distinguish between excitatory and inhibitory post-synaptic potentials.
16. Describe how synaptic events are integrated and modified.
17. Define neurotransmitter and name several classes of neurotransmitter.
18. Describe common patterns of neuronal organization and processing.



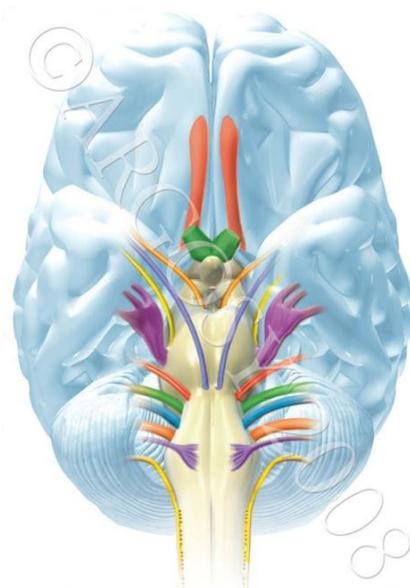
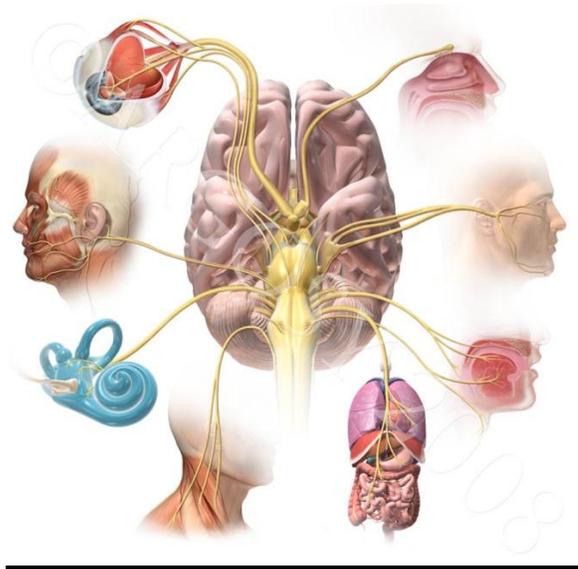
## Chapter 8 The Central Nervous System

1. Explain lateralization of hemisphere function.
2. List the major spinal cord tracts, and describe each in terms of its origin, termination, and function
3. Identify the three major regions of the brain stem, and note the general function of each area.
4. Describe the structure and function of the cerebellum.
5. Describe the role and functions of the basal nuclei
6. Localize the limbic system and the reticular formation and explain the role of each functional system.
7. Distinguish between types of paralysis.
8. Describe an EEG.
9. Differentiate between types of memory.
10. Describe the structures and functions of the Diencephalons, midbrain, pons, cerebellum and medulla oblongata.
11. Describe how meninges, cerebrospinal fluid, and the blood brain barrier protect the central nervous system.
12. Describe the gross and microscopic structure of the spinal cord.
13. Name the major regions of the adult brain.
14. Define the term ventricle and indicate the location of the ventricles of the brain.
15. List the major lobes, and functional areas of the cerebral cortex.



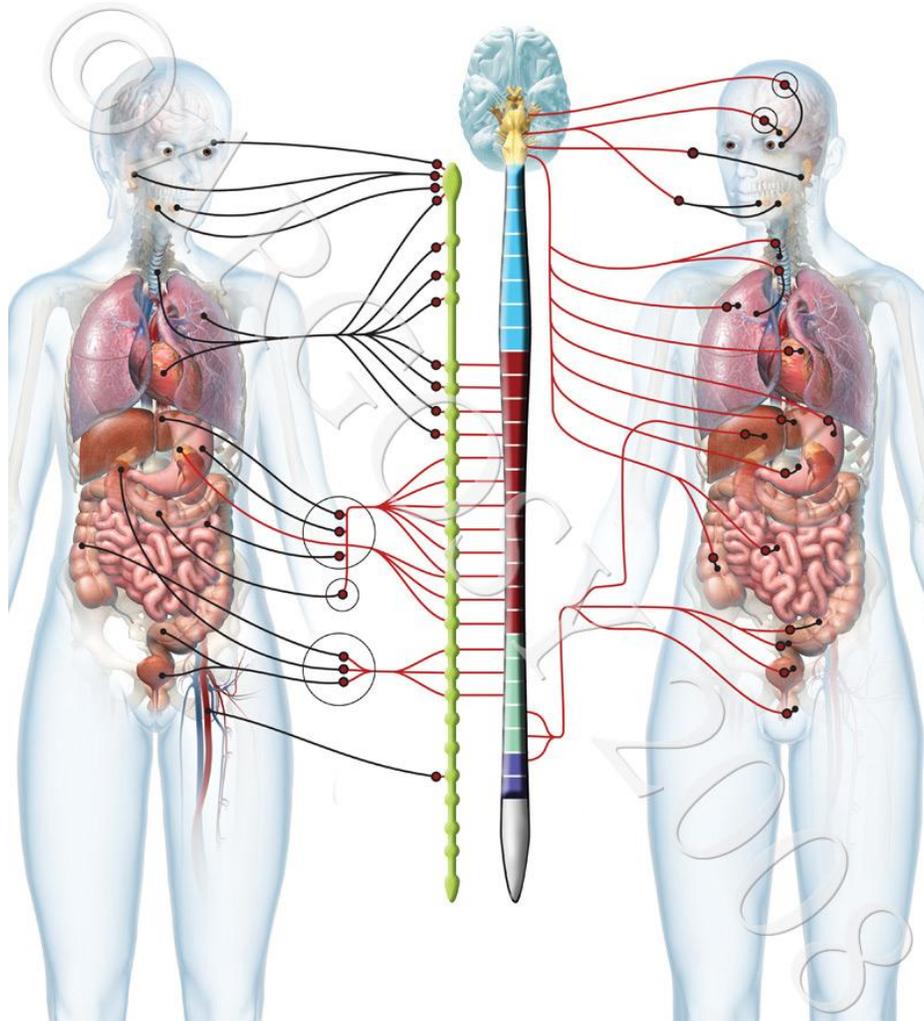
## Chapter 8 The Peripheral Nervous System

1. Define peripheral nervous system and list its components.
2. Name the 12 pairs of cranial nerves and describe the body region and structures innervated by each.
3. Describe the structure of the spinal nerves.
4. Define dermatome and explain function.
5. Define plexus. Name the major plexuses, their origin sites, and their area of innervations.
6. Define reflex. Define simple and complex reflexes and give examples of each.
7. Describe how spinal reflexes are controlled.
8. List nerve plexuses and areas they innervate.
9. Compare and contrast stretch, flexor, and crossed extensor reflexes.
10. List and describe the sensory and motor pathways and explain their mechanisms.
11. Compare and contrast the motor endings of somatic and autonomic nerve fibers.
12. Distinguish between autonomic and somatic reflexes.



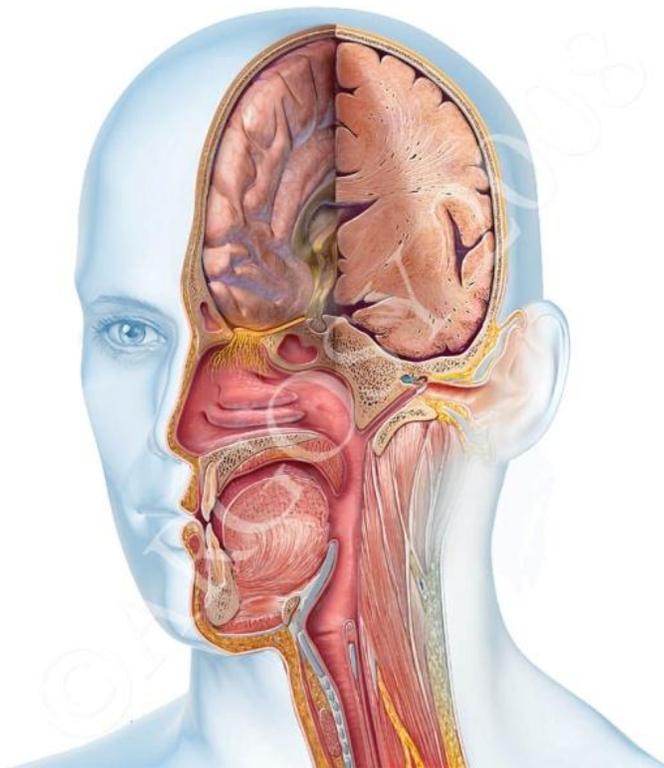
## Chapter 8 The Autonomic Nervous System

1. Compare the somatic and autonomic nervous systems relative to effectors, efferent pathways, and neurotransmitter divisions.
2. Describe the site of CNS origin, locations of ganglia, and general fiber pathways of parasympathetic and sympathetic divisions.
3. Compare and contrast the general functions of the parasympathetic and sympathetic divisions.
4. Define cholinergic and adrenergic fibers, and list the different types of cholinergic and adrenergic receptors.
5. Briefly describe the clinical importance of drugs that mimic or inhibit adrenergic or cholinergic effects.
6. State the effects of the parasympathetic and sympathetic divisions on the following organs: heart, blood vessels, gastrointestinal tract, lungs, adrenal medulla, and external genitalia.
7. Describe the levels of control of autonomic nervous system functioning.
8. Describe the effects of aging on the autonomic nervous system



## Chapter 9 - The General and Special Senses

1. Distinguish between the general senses and the special senses.
2. Identify the receptors for the general senses and describe how they function.
3. Describe sensation and adaptation.
4. List three classes of mechanoreceptors and describe functions of each.
5. Differentiate between the three types of pain and give examples of each.
6. Describe the location and structures of taste and smell receptors and explain how these receptors are activated. Describe mechanism of chemical detection.
7. Describe the structure and function of accessory eye structures, eye tunics, lens, and humors of the eye.
8. Explain how we are able to see objects and distinguish colours.
9. Compare and contrast light and dark adaptation.
10. Briefly note the cause and consequences of astigmatism, cataract, glaucoma, hyperopia, myopia, and color blindness.
11. Describe the structure and general function of the outer, middle, and inner ear.
12. Describe the hearing process.
13. Describe the two types of equilibrium.
14. Briefly list possible causes and symptoms of otitis media, deafness, Meniere's syndrome, and motion sickness.
15. List changes that occur in these special organs with aging.



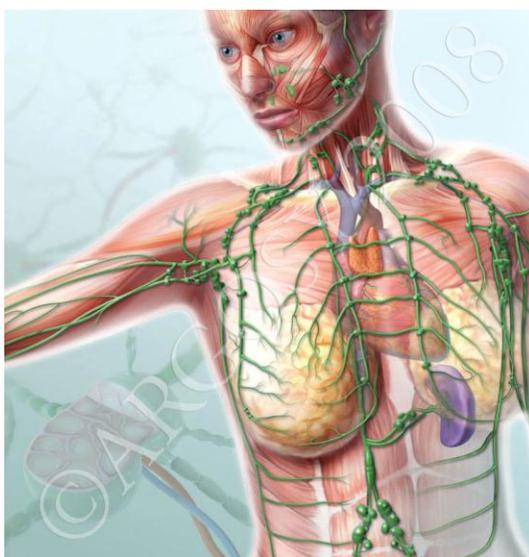
## Chapter 10 the Endocrine System

1. List the major endocrine organs; describe their locations in the body.
2. Describe the structural and functional relationships between the hypothalamus and the pituitary gland.
3. Indicate important differences between hormonal and neural controls of body
4. Describe how hormones are classified chemically.
5. Describe hormones and list three types.
6. Distinguish between circulating hormones and local hormones.
7. Describe the two major mechanisms by which hormones bring about their effects on their target tissues, and explain how hormone release is regulated.
8. List and describe the chief effects of anterior pituitary hormones.
9. Discuss the structure of the posterior pituitary and describe the effects of the two hormones it releases.
10. Describe the important effects of the two groups of hormones produced by the thyroid gland. Follow the process of thyroxine formation and release.
11. Indicate the general functions of parathyroid hormone.
12. List the hormones produced by the cortical and medullary regions of the adrenal gland, and cite their physiological effects.
13. Compare and contrast the effects of the two major pancreatic hormones.
14. Briefly describe the importance of thymic hormones in the operation of the immune system.
15. Briefly explain the hormonal functions of the kidney and the pineal gland.
16. Describe the functional roles of the hormone products of the testes, ovaries, placenta and adipose tissue.
17. Describe the patterns of hormonal interaction and their effects on growth and behavior.
18. Describe the effect of aging on endocrine system functioning.



## Chapter 14 - The Lymphatic System and Immunity

1. Describe the organization and function of the lymphatic system.
2. List the body's nonspecific defenses and how this functions.
3. Describe the source of lymph and mechanism(s) of lymph transport.
4. Describe lymphocytes and list three types with their functions.
5. Describe lymph nodules and give examples.
6. Name the major lymphoid organs and define their function.
7. Describe the general location, histological structure, and functions of lymph nodes.
8. Describe the surface membrane barriers and their protective functions.
9. Explain the two categories of body defense mechanisms.
10. Relate the events of the inflammatory process. Identify several inflammatory chemicals and describe their specific roles.
11. Describe the role of macrophages and other phagocytes in immunity.
12. Explain how fever helps protect the body against invading pathogens.
13. List and describe the body's specific immune responses.
14. List and describe the forms of immunity.
15. Describe the properties of immunity.
16. Describe cell-mediated immunity.
17. List and describe types of T cells.
18. Describe antibody-mediated immunity.
19. Describe antibody structure and how it works with antigens
20. List and briefly describe types of antibodies.
21. List and describe antibody functions.
22. Describe primary and secondary response.
23. List types of hormones in the immune system.
24. List and describe types of immune disorders.



## Chapter 17 – Metabolism and Energetics

1. Define metabolism, anabolism, and catabolism.
2. Explain why cells need to synthesize new organic molecules.
3. What is the primary role of the TCA cycle in the production of ATP?
4. Define gluconeogenesis.
5. Describe the metabolism of major nutrients:
6. Describe the basic steps involved in glycolysis, and the electron transport system, and summarize the energy yields of glycolysis and cellular respiration.
7. Describe the pathways involved in lipid metabolism, and summarize mechanisms of lipid transport and distribution.
8. Discuss protein metabolism and the use of proteins as an energy source.
9. Why HDLs are considered good cholesterol?
10. How does a diet deficient in vitamin B<sub>6</sub> affect protein metabolism?
11. Discuss nucleic acid metabolism and the limited use of nucleic acids as an energy source.
12. Why do cells not use DNA as an energy source?
13. Explain what constitutes a balanced diet, and why such a diet is important.
14. Identify the two types of vitamins and describe what they are used for?
15. Define metabolic rate, describe the factors involved in determining an individual's metabolic rate, and discuss the homeostatic mechanisms that maintain a constant body temperature.
16. Describe the age-related changes in dietary requirements.

## APPENDIX A

### KEYANO COLLEGE GRADING SCALE

#### Overview of 4.0 Point Alpha and Numeric Grading System

Descriptor	Alpha Scale	4.0 Numeric Scale	Percentage
<b>Excellent</b>	<b>A+</b>	<b>4.0</b>	<b>96-100</b>
	<b>A</b>	<b>4.0</b>	<b>90-95</b>
	<b>A-</b>	<b>3.7</b>	<b>85-89</b>
<b>Good</b>	<b>B+</b>	<b>3.3</b>	<b>80-84</b>
	<b>B</b>	<b>3.0</b>	<b>76-79</b>
	<b>B-</b>	<b>2.7</b>	<b>72-75</b>
<b>Satisfactory</b>	<b>C+</b>	<b>2.3</b>	<b>68-71</b>
	<b>C</b>	<b>2.0</b>	<b>64-67</b>
	<b>C-</b>	<b>1.7</b>	<b>60-63</b>
<b>Poor Minimum Pass</b>	<b>D+</b>	<b>1.3</b>	<b>55-59</b>
	<b>D</b>	<b>1.0</b>	<b>50-54</b>
<b>Failure</b>	<b>F</b>	<b>0</b>	<b>0-49</b>