

**SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY**

**SAULT STE. MARIE, ONTARIO**



Sault College

**COURSE OUTLINE**

**COURSE TITLE:** Anatomy and Physiology I  
**CODE NO. :** PNG111 **SEMESTER:** 1  
**PROGRAM:** Practical Nursing ; Fitness and Health  
**AUTHOR:** Ann Boyonoski, Gwen DiAngelo, Northern Partners in Practical Nursing Education  
**DATE:** Sept/08 **PREVIOUS OUTLINE DATED:** Sept/07  
**APPROVED:** "Marilyn King"

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**CHAIR, HEALTH PROGRAMS**

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**DATE**

**TOTAL CREDITS:** 3

**PREREQUISITE(S):** None

**HOURS/WEEK:** 3

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*For additional information, please contact the Chair, Health Programs*  
*School of Health and Community Services*  
*(705) 759-2554, Ext. 2689*

**I. COURSE DESCRIPTION:**

This course introduces the learner to the normal development, structures and functions of the human body. The learner will examine the physiological components of the human body, in order to obtain knowledge and understanding about how the structures and functions of the body are related.

**II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:**

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

1. Use the appropriate terminology related to the organization, structure and function of the human body.

**Elements of the Performance:**

- Define anatomy and physiology
  - Name the following :
    - levels of organization of the human body
    - major organs for each body system
    - the directional terms that describe the location of body parts
    - the major body regions
    - the 3 planes used in making sections of the body or body parts
    - the 2 major body cavities, their subdivisions and membranes
    - the major organs located in each body cavity
    - the 4 quadrants and 9 regions of the abdominopelvic region
  - Review the selected key terms (vocabulary) for each specific area of study/system studied
2. Examine the chemical composition and chemical interactions (life processes) of the human body.

**Elements of the Performance:**

- Describe the basic structure of an atom
- Explain the meaning of a chemical formula
- Distinguish between organic and inorganic compounds
- Compare the 3 types of chemical bonds
- Identify the difference between acids, bases and salts
- Examine the concept of pH and its relationship to acids, bases and salts in the body
- List the 4 major groups of organic substances in the body and give examples and functions of specific types in each group
- Explain the role of enzymes
- Describe the composition and role of ATP
- Explain the relationship between elements, compounds, atoms and molecules
- Explain the properties that make water such an important inorganic molecule in living organisms
- Explain why knowledge of basic chemistry is important in the study of life processes.

3. Describe the relationship between the structure and function of the human body.

**Elements of the Performance:**

- Define homeostasis and explain its relationship to normal body functions
- List the five basic needs essential to human life

4. Describe the location, development, structure and function of cells, tissues and organs of stated body systems

**Elements of the Performance:**

**THE CELL**

- Describe the structure of a typical cell
- List the function of each part of a typical cell
- Identify the 2 processes that allow substances to enter and leave cells
- Explain the role of DNA and RNA
- List the 2 processes of cell division
- Differentiate the phases of mitosis and meiosis

**TISSUES AND MEMBRANES**

- Describe the distinguishing characteristics of each type of tissue and membrane
- Identify the common location and function of each type of tissue and membrane

**SYSTEMS**

- **Integumentary System:**
  - Describe the basic structure of the skin and its layers
  - Describe the basic functions of the skin and its layers
  - Describe how skin colour is determined
  - Identify and describe the basic functions of the accessory structures of the skin formed by the epidermis
- **Skeletal System:**
  - Identify the major functions of the skeletal system
  - Identify the composition of bone structure
  - Explain the basic process of bone formation
  - Name the 2 divisions of the skeleton
  - Identify the bones of the axial and appendicular skeleton
  - Compare cervical, thoracic, lumbar, and sacral vertebrae
  - Compare immovable, slightly movable and freely movable joints
- **Muscle System:**
  - Compare the structure and function of the 3 types of muscle tissue
  - Explain the basic concept of muscle contraction
  - Explain the relationship between muscle origin, insertion and action
  - Identify the major muscles of the body
  - Describe the location and action of the major muscles of the body

Potential Elements of the Performance:

**Nervous System**

- Name the anatomical divisions of the nervous system, their components and functions
- Name the functional divisions of the nervous system, their components and functions
- Identify the 2 types of cells that make-up nerve tissue
- Describe the formation and conduction of a nerve impulse
- Describe how impulses are transmitted across a synapse
- Explain how the central nervous system is protected from injury

**The Special Senses**

- Describe the basic function of sensory receptors, neurons, nerves and the cerebral cortex
- Describe the location of receptors for heat, cold, touch, pressure and pain
- Describe the location, structure and function of olfactory and taste receptors, receptors involved in hearing, receptors involved in equilibrium and sight

**Endocrine System** (may be deferred until PNG121)

- Distinguish between endocrine and exocrine glands and their functions
- Distinguish between hormones and prostaglandins and their functions
- Describe the basic control and actions of the hypothalamus, pituitary, thyroid and parathyroid, adrenal, pancreatic and male and female gonadal hormones

**III. TOPICS:**

1. Organization of the Human Body
2. The Chemical Basis of Life
3. The Cell
4. Tissues and Membranes
5. Integumentary System
6. Skeletal System
7. Muscular System
8. Nervous System
9. Special Senses
10. Endocrine System (tentative)

**IV. REQUIRED RESOURCES/TEXTS/MATERIALS:**

Marieb, E. N. (2009). *Essentials of Human Anatomy and Physiology*. (9<sup>th</sup> ed.). Benjamin Cummings.

Marieb, E. N. (2009). *Anatomy and Physiology Colouring Workbook: A Complete Study Guide*. (9<sup>th</sup> ed). Benjamin Cummings.

V. EVALUATION PROCESS/GRADING SYSTEM:

1. **The pass mark for this course is 60%.** It is composed of term tests, a final exam, and course work.

2. Evaluation Methods:

4 Tests (15% each; MC and diagrams)	60%
Final Exam (MC & diagrams)	30%
Course work	<u>10%</u>
TOTAL	100%

Course Work:

Study quizzes will be available online and completion of these quizzes will contribute to the course work grade. Study quizzes will cover material within each chapter and can be written twice. The student must get at least 75% on the chapter material before “credit” will be given for the quiz. The **actual** quiz marks DO NOT contribute to the final grade.

Course work mark also requires that upon completion of each test, the student must hand in study notes/work sheets that demonstrate independent work. Study notes may include, but are not limited to, hand written pages, work from the study guide, printouts from websites, index cards, posters.... They will NOT be graded (test marks should reflect their value!).

Final exam will consist of anatomy and physiology from the **entire** course.

3. Students missing the quizzes for any reason will **not** be able to write them at any other date.
4. Students missing the mid-term exam or final exam because of illness or other serious reason must inform the professor **before** the exam 759-2554, Ext. 2635 OR via email/LMS. Those students who have notified the professor of their absence, according to policy, will be eligible to arrange an opportunity **as soon as possible** to write the exam at another time. Those students who **do not notify** the professor will receive a zero for that exam. See Student Success Guide.

**V. EVALUATION PROCESS/GRADING SYSTEM:**

## 5. Course Grading Scheme:

The following semester grades will be assigned to students in post-secondary courses:

<u>Grade</u>	<u>Definition</u>	<u>Grade Point Equivalent</u>
A+	90 – 100%	4.00
A	80 – 89%	
B	70 - 79%	3.00
C	60 - 69%	2.00
D	50 – 59%	1.00
F (Fail)	49% and below	0.00
CR (Credit)	Credit for diploma requirements has been awarded.	
S	Satisfactory achievement in field /clinical placement or non-graded subject area.	
U	Unsatisfactory achievement in field/clinical placement or non-graded subject area.	
X	A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course.	
NR	Grade not reported to Registrar's office.	
W	Student has withdrawn from the course without academic penalty.	

**Note:** For such reasons as program certification or program articulation, certain courses require minimums of greater than 50% and/or have mandatory components to achieve a passing grade.

It is also important to note, that the minimum overall GPA required in order to graduate from a Sault College program remains 2.0.

**VI. SPECIAL NOTES:**Special Needs:

If you are a student with special needs (e.g. physical limitations, visual impairments, hearing impairments, or learning disabilities), you are encouraged to discuss required accommodations with your professor and/or the Special Needs office (Room E1101, Extension 2703) so that support services can be arranged for you.

Communication:

The College considers **WebCT/LMS** as the primary channel of communication for each course. Regularly checking this software platform is critical as it will keep you directly connected with faculty and current course information. Success in this course may be directly related to your willingness to take advantage of the **Learning Management System** communication tool.

Retention of Course Outlines:

It is the responsibility of the student to retain all course outlines for possible future use in acquiring advanced standing at other post-secondary institutions.

Plagiarism:

Students should refer to the definition of “academic dishonesty” in the *Student Code of Conduct*. Students who engage in “academic dishonesty” will receive an automatic failure for that submission and/or such other penalty, up to and including expulsion from the course/program, as may be decided by the professor/dean. In order to protect students from inadvertent plagiarism, to protect the copyright of the material referenced, and to credit the author of the material, it is the policy of the department to employ a documentation format for referencing source material.

Course Outline Amendments:

The professor reserves the right to change the information contained in this course outline depending on the needs of the learner and the availability of resources.

Substitute course information is available in the Registrar's office.

Attendance

Various handouts may be given out during class, students will be required to hand in some work, and students are responsible for keeping up with course material. The easiest way to do this, is to attend classes.

**VII. PRIOR LEARNING ASSESSMENT:**

Students who wish to apply for advance credit transfer (advanced standing) should obtain an Application for Advance Credit from the program coordinator (or the course coordinator regarding a general education transfer request) or academic assistant. Students will be required to provide an unofficial transcript and course outline related to the course in question.

Credit for prior learning will also be given upon successful completion of a challenge exam or portfolio.