

**SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY**

**SAULT STE. MARIE, ONTARIO**



**COURSE OUTLINE**

**COURSE TITLE:** Pathophysiology I

**CODE NO. :** PNG233 **SEMESTER:** 3

**PROGRAM:** Practical Nursing

**AUTHOR:** Northern Partners in Practical Nursing Education,  
Gwen DiAngelo, Ann Boyonoski

**DATE:** Sept/06 **PREVIOUS OUTLINE DATED:** Sept/05

**APPROVED:**

	_____ <b>ASSOCIATE DEAN</b>	_____ <b>DATE</b>
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**TOTAL CREDITS:** 4

**PREREQUISITE(S):** PNG126

**HOURS/WEEK:** 4

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*For additional information, please contact the Associate Dean,*

*School of Health*

*(705) 759-2554, Ext. 2689*

**I. COURSE DESCRIPTION:**

This course provides the learner with a general understanding and working knowledge of the structure and function of the human body experiencing an **acute** health challenge. The learner will examine changes that occur in the human body and explore how the body compensates for those challenges. Included in this course is the study of the basic principles of microbiology.

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

Upon successful completion of this course, the student will demonstrate the ability to:

1. Use the appropriate terminology related to how normal physiological processes are altered by acute health challenges (disease).
2. Explain the basic pathophysiological concepts of an acute health challenge.
3. Describe how the human body compensates for an acute health challenge.
4. Examine common acute health challenges and their effect on the human body.
5. Examine typical diagnostic testing for common acute health challenges.
6. Examine the effects of microbes on the body.

**Review the selected key terms (vocabulary) for each specific concept/system.**

**The requirements of the learning outcomes will be met by the defined elements of performance under the following :**

**CONCEPTS OF DISEASE**

**1. Introduction to Pathophysiology**

- Explain the role of pathophysiology in the diagnosis and treatment of disease
- Review normal defences of the body
- Identify specific and non-specific mechanical defences
- Discuss the stress response and its relationship to disease

**2. Inflammation**

- Define inflammation
- Explain the steps of the inflammatory process
- Identify common causes of inflammation
- Describe the signs and symptoms of inflammation (local and systemic effects)
- Describe the characteristics of exudates
- Discuss diagnostic tests used to diagnose and monitor inflammation

**3. Infection**

- Define microbiology
- Describe the typical characteristics of a bacteria, virus, fungus, parasite
- Define resident flora
- Examine the transmission of infectious agents
- Describe the chain of infection
- List factors contributing to host resistance to infection
- Discuss interventions to prevent spread of infection ( Guidelines for standard and transmission based precautions)
- Describe the progression of infection
- Identify common nosocomial infections
- Discuss diagnostic tests used to diagnose and monitor infection

**4. Healing**

- Describe the types of healing
- Explain the healing process
- Identify factors that effect healing

**5. Fluid and electrolyte balance – Acid /base imbalance**

- Identify functions and regulatory mechanisms that maintain fluid and electrolyte balance
- Identify the common causes of fluid volume excess
- Describe the signs and symptoms and complications of fluid volume excess
- Identify the common causes of fluid volume deficit
- Describe the signs and symptoms and complications of fluid volume deficit
- Compare and contrast the effects of fluid volume excess/deficit
- Identify the common causes, signs and symptoms and complications of the following electrolyte imbalances – hypo/hyponatremia, hypo/hyperkalemia and hypo/hypercalcemia
- Define acidosis and alkalosis (metabolic and respiratory)
- Identify the common causes, signs and symptoms and complications of acidosis and alkalosis (metabolic and respiratory)
- Discuss diagnostic tests used to diagnose and monitor fluid, electrolyte and acid/base imbalances

**6. Pain**

- Define acute pain
- Identify the causes, signs and symptoms of acute pain
- Describe the pain pathway
- Relate the methods of pain control to the gate control theory
- Discuss factors that may alter perception of acute pain
- Compare acute and chronic pain

## **ACUTE ALTERATIONS IN SYSTEMS FUNCTIONING**

### **1. Integument**

- Describe common acute skin infections/infestations caused by bacteria, viruses, fungi and parasites
- Discuss the pathophysiology of a thermal injury (burn)
- Identify types of burns
- Discuss the classification system used for burn injuries
- Discuss extent classification of burns
- Describe the local and systemic effects and common complications of a major burn injury
- Discuss diagnostic tests used to diagnose and monitor acute disorders of the skin, including burns

### **2. Respiratory**

- Identify the etiology, contributing factors, signs and symptoms of common acute respiratory disorders (upper and lower) eg. croup, epiglottitis, pneumonia, asthma, RSV
- Explain the progressive airway response to a stimulus
- Compare intrinsic and extrinsic asthma
- Discuss the complications of asthma
- Compare hemothorax and pneumothorax
- Discuss diagnostic tests used to diagnose and monitor respiratory disorders

### **3. Cardiovascular**

- Define hypertension
- Discuss the development/risk factors of hypertension
- Compare primary and secondary hypertension
- Identify the complications and pathological changes of hypertension
- Examine the etiology, contributing factors, signs and symptoms of common occlusive disorders (atherosclerosis, angina, coronary artery disease, myocardial infarction)
- Compare angina and myocardial infarction
- Describe the etiology, contributing factors, signs and symptoms and complications of common peripheral vascular disease (arterial and venous)
- Discuss the etiology, contributing factors, signs and symptoms and complications of pulmonary edema
- Examine the diagnostic tests used to diagnose and monitor cardiovascular disorders
- Define shock
- Identify the etiology, contributing factors, signs and symptoms and complications of the various types of shock (hypovolemic, anaphylactic, cardiogenic, septic and neurogenic)

**4. Gastrointestinal**

- Examine the etiology, contributing factors, signs and symptoms and complications of common gastrointestinal disorders (appendicitis, cholecystitis, cholelithiasis, intestinal obstruction, hernia, pancreatitis)
- Compare mechanical and functional obstruction
- Define jaundice
- Identify the common disorders that cause jaundice
- Describe the typical changes of acute liver disease
- Examine the diagnostic tests used to diagnose and monitor gastrointestinal disorders
- Identify the causes of viral hepatitis
- Compare viral hepatitis A with viral hepatitis B and C
- Explain the significance of serologic tests and preventative immunization for viral hepatitis

**5. Genitourinary**

- Identify the etiology, contributing factors, signs and symptoms and complications of common urinary tract disorders (cystitis, pyelonephritis, UTI, renal calculus)
- Identify the etiology, contributing factors, signs and symptoms, progression and complications of common sexually transmitted diseases (chlamydia, gonorrhea, syphilis, genital herpes, genital warts, trichomoniasis)
- List the most common causes of vaginal bleeding
- Discuss the contributing factors, signs and symptoms of the common complications of pregnancy (PIH, ectopic, toxemia, eclampsia, placental alterations)
- Compare placenta previa and placenta abruptio
- Examine the diagnostic tests used to diagnose disorders of the urinary tract, STD and complications of pregnancy
- List the common causes of abortion
- Compare spontaneous and induced abortion

**6. Musculoskeletal**

- Describe the types of fractures
- Describe the complications of fractures
- Discuss the process of bone healing
- Compare dislocations, sprains and strains
- Examine the diagnostic tests used to diagnose and monitor musculoskeletal disorders

**7. Neurological**

- Identify the etiology, contributing factors, signs and symptoms of the various types of headaches
- Identify the etiology, contributing factors, signs and symptoms and complications of common neurologic alterations (head injury, TIA, CVA, spinal cord injury)
- Compare TIA and CVA
- Discuss the early and late manifestations of increased intracranial pressure
- Examine the diagnostic tests used to diagnose and monitor acute neurologic disorders

### 8. Psychological

- Discuss the biologic and psychosocial theories about the etiology of mood disorders (major depression and bipolar disorders)
- Identify the signs and symptoms of common mood disorders
- Describe the assessment of suicide risk
- Discuss the biologic and psychosocial theories about the etiology of anxiety (panic, phobias, post –traumatic stress disorder, obsessive-compulsive disorder, generalized anxiety disorder)
- Identify the signs and symptoms of anxiety
- Examine the common diagnostic tests/tools used to diagnose and monitor mood disorders and anxiety

### III. TOPICS:

1. Introduction to Pathophysiology
2. Inflammation
3. Infection
4. Healing
5. Fluid and electrolyte balance – Acid /base imbalance
6. Pain
7. Disorders of the Integument
8. Respiratory Disorders
9. Cardiovascular Disorders
10. Gastrointestinal Disorders
11. Genitourinary Disorders
12. Musculoskeletal Disorders
13. Neurological Disorders
14. Psychological Disorders

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

Gould B. E. (2006). *Pathophysiology for the Health Professions* (3<sup>rd</sup> ed.). Saunders.

Marieb, E. N. (2006). *Essentials of Human Anatomy and Physiology* (8<sup>th</sup> ed.). Benjamin-Cummings.

#### USEFUL:

Springhouse (2002). *Pathophysiology made Incredibly Easy* (2<sup>nd</sup> ed.). Lippincott, William and Wilkins.

Kee Lefever, Joyce (2001). *Handbook of laboratory and diagnostic tests* (4<sup>th</sup> ed.). Upper Saddle River, NJ: Prentice Hall. (*used in Semester 4*)

V. EVALUATION PROCESS/GRADING SYSTEM:

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

2. Evaluation Methods:

Quizzes (6 in total, 5 are counted) 25%

Mid-Term Exam (multiple choice) 30%

Final Exam (multiple choice) 35%

2 Case Studies (5% each) 10%

TOTAL 100%

Mid-term exam will consist of course material from the beginning of the course until the mid-term date.

Final exam will consist of material from the **entire** course with emphasis on material covered from the mid-term exam to the end of the course.

3. Students who receive a mark of below 60% **may** be eligible to write a supplemental exam. The following criteria applies:  
The student must have:

- received at least 57% in the overall mark
- achieved 60% in at least half of the quizzes
- attended at least 80% of the classes
- passed **ALL** other PNG courses

The supplemental exam will cover the **entire semester**.

***Only one supplemental exam will be offered.***

4. Students missing the quizzes for any reason will **not** be able to write them at any other date.

5. Students missing the mid-term exam or final exam because of illness or other serious reason must phone the professor **before** the exam to inform her/him (759-2554, Ext. 2635). 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.

6. Students receiving borderline marks (49, 59, 69, 79, 89) will have their mark advanced to the next category if they have attended at least 80% of the classes.

The following semester grades will be assigned to students in postsecondary courses:

<u>Grade</u>	<u>Definition</u>	<u>Grade Point Equivalent</u>
A+	90 - 100%	4.00
A	80 - 89%	4.00
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.	

**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 instructor and/or the Special Needs office. Visit Room E1101 or call Extension 2703 so that support services can be arranged for you.

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 postsecondary 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.

**VII. PRIOR LEARNING ASSESSMENT:**

Students who wish to apply for advanced credit in the course should consult the professor. Credit for prior learning will be given upon successful completion of a challenge exam or portfolio.

**VIII. DIRECT CREDIT TRANSFERS:**

Students who wish to apply for direct credit transfer (advanced standing) should obtain a direct credit transfer form from the Dean's secretary. Students will be required to provide a transcript and course outline related to the course in question.