

SYLLABUS

TITLE: Pathophysiology

COURSE CODE: ENF 230

PREREQUISITE:

On-site Education: BIO 101

Distance Education: QUI 118, BIO 102, ENF 101 or ENF 102, ENF 101T, ENL 101, ENF 206, ENL 206, ENF 231, ENF 231T

COREQUISITES:

On-site Education: None

Distance Education: ENF 341

CREDITS: Three (3) credits, 45 hours

DESCRIPTION

The objective of this course is to develop the necessary skills for learning, considering growth and development stages. Humans are holistic beings, therefore, are affected by the interaction with their surroundings, society, alterations in the health-illness continuum, and by ethical, moral, and legal aspects. The nursing process is developed through learning experiences, focused on behavior and stimuli assessment related to performance modifications in the physiological mode of the organism, as well as their diagnosis assessment and treatment.

JUSTIFICATION

Philosophy establishes that the human being grows, develops, and faces certain alterations in his health-illness continuum, therefore, skills and knowledge related to these alterations shown in the human being must be developed. Thus, it is important that students have a broad knowledge about the etiology of diseases, how they affect the human organism, its clinical manifestations, and its different adaptive responses to these biological, psychological, social, and spiritual aggressions from the perspective that human beings are holistic.

COMPETENCIES, LEVEL II

At the end of this course, the student will be able to:

1. Compare signs and symptoms with the client's diagnostic tests in hypothetical situations to promote safe and quality care to different populations. *Ess. II*
2. Find studies related to various pathologies. *Ess. III*
3. Recognize the role that technology plays to improve customer care outcomes and to create a safe care environment. *Ess. IV*
4. Compare protective and predictive factors, including genetic factors, that influence the health of individuals and populations. *Ess. VII*
5. Identify risk factors considering health and illness beliefs, values, attitudes, and practices of individuals and populations. *Ess. VII*

PROFESSIONAL GUIDES AND STANDARDS

The curriculum is based on the following documents:

American Association of Colleges of Nursing. (2008). *The Essentials of Baccalaureate Education for Professional Nursing Practice*. Washington, DC: Author.

American Nurses Association. (2015). *The Guide to the Code of Ethics for Nurses: Interpretation and Application*. Washington, DC: Author. ISBN: 1-55810-176-4

American Nurses Association. (2015). *Nursing: Scope and Standards of Practice (2nd ed.)* Washington, DC: ISBN author: 1-55810-215-9

American Nurses Association (2015). *Nursing's Social Policy Statement: The Essence of the Profession* (3rd ed.). Washington, DC: Author ISBN: 1-55810-214-0

CONTENT

- I. Basic pathophysiology concepts
 - A. Genes and genetic diseases
 1. DNA, RNA and proteins: Molecular basis of inheritance
 2. Chromosomes
 3. Elements of formal genetics
 4. Transmission of genetic diseases
 5. Linkage analysis and gene mapping
 6. Multifactorial Inheritance

- B. Altered cellular and tissue biology
 - 1. Cell adaptation
 - 2. Cell injury
 - 3. Signs of cell tumors
 - 4. Cell death
 - 5. Aging and altered cellular and tissue biology
 - 6. Somatic death
- II. Physiological Adaptation Mode: basic need - protection
 - A. Distribution of body fluids
 - B. Geriatric considerations: Aging and distribution of body fluids.
 - C. Disorders of water balance
 - D. Sodium, chloride, and water balance
 - E. Abnormalities in sodium, chloride, and water balance
 - F. Potassium and electrolytes disorders
 - G. Acid-base balance
- III. Physiological adaptation mode: basic need - protection
 - A. Innate immunity: Inflammation and wound healing
 - 1. Human defense mechanisms
 - 2. Innate immunity
 - 3. Acute and chronic inflammation
 - 4. Wound healing
 - 5. Geriatric considerations: Age-related factors that affect innate immunity in the elderly
 - B. Adaptive immunity
 - 1. Third line of defense: Adaptive immunity
 - 2. Antigens and immunogens
 - 3. Humoral immune response
 - 4. Cell-mediated immunity
 - 5. Immune response: T cell-B cell collaboration
 - 6. Geriatric considerations: Age-related factors that affect defense mechanisms in the elderly
 - C. Infection and defects in mechanisms of defense
 - 1. Infection
 - 2. Immune deficiencies
 - 3. Hypersensitivity: Allergy, autoimmunity, and alloimmunity
 - D. Stress and illness
 - a. Historical background and general concepts
 - b. Overview of stress: Multiple mediators and systems
 - c. Stress response

- d. Stress, personality, coping, and illness
- e. Geriatric considerations: Aging and stress-age syndrome

IV. Cell proliferation: cancer

- A. Biology, clinical manifestations, and cancer treatment
 - 1. Cancer terminology and characteristics
 - 2. Cancer cell biology
 - 3. Cancer invasion and metastasis
 - 4. Clinical manifestations and cancer treatment
- B. Cancer epidemiology
 - 1. Genes, lifestyle, environment, and risk factors

V. Physiological adaptation mode: complex processes - neuro function and senses

- A. Structure and function of the nervous system
 - 1. Overview and organization of the nervous system
 - 2. Nervous system cells
 - 3. Nerve impulse
 - 4. Central nervous system
 - 5. Peripheral nervous system
 - 6. Autonomic nervous system
 - 7. Geriatric considerations: Aging and the nervous system
- B. Pain, temperature, sleep, and sensory function
 - 1. Pain
 - 2. Temperature regulation
 - 3. Sleep
 - 4. Special senses
 - 5. Geriatric considerations: Aging and changes in hearing, smell, and taste
 - 6. Somatosensory function
- C. Behavior assessment, diagnosis, stimuli, and treatment of cognitive system, cerebral hemodynamics, and motor function.
 - 1. Alterations in cognitive systems
 - 2. Alterations in cerebral hemodynamics
 - 3. Alterations in neuromotor functions
 - 4. Alterations in motor cortex
 - 5. Extrapyrmidal motor syndromes
- D. Disorders of central and peripheral nervous systems and of neuromuscular junction
 - 1. Central nervous system disorders
 - 2. Disorders of the peripheral nervous system and neuromuscular junction
 - 3. Central nervous system tumors

VI. Physiological adaptation mode: complex process - endocrine function

- A. Mechanisms of hormonal regulation
 - 1. Mechanisms of hormonal regulation
 - 2. Structure and function of endocrine glands
 - 3. Geriatric considerations: Aging and its effects on specific endocrine glands.
 - B. Behavior assessment, diagnosis, stimuli, and treatment of hormonal regulation
 - 1. Mechanisms of hormonal alterations
 - 2. Alterations of the hypothalamic-pituitary system
 - 3. Altered thyroid function
 - 4. Altered parathyroid function
 - 5. Endocrine pancreas dysfunction
 - 6. Altered adrenal function
- VII. Physiological adaptation mode: basic need - oxygenation
- A. Structure and function of the hematological system
 - 1. Hematological system components
 - 2. Blood cell formation
 - 3. Mechanisms of homeostasis
 - 4. Aging and changes in hematological values
 - B. Behavior assessment, diagnosis, stimuli, and treatment of hematological function
 - 1. Alterations of erythrocyte function
 - 2. Myeloproliferative disorders
 - 3. Alterations in leukocyte function
 - 4. Alterations in lymphoid function
 - 5. Alterations in splenic function
 - 6. Alterations of platelet function and coagulation
- VIII. Physiological adaptation mode: basic need - oxygenation
- A. Structure and function of the cardiovascular and lymphatic systems
 - 1. Circulatory system
 - 2. Heart
 - 3. Systemic circulation
 - 4. Lymphatic system
 - B. Behavior assessment, diagnosis, stimuli, and treatment of cardiovascular function
 - 1. Venous diseases
 - 2. Arterial diseases
 - 3. Heart wall abnormalities
 - 4. Heart disease symptoms
 - 5. Shock
- IX. Physiological adaptation mode: basic need - oxygenation
- A. Structure and function of the pulmonary system

- a. Pulmonary system structure
 - b. Lung system function
 - c. Geriatric considerations: Aging and the pulmonary system
 - B. Behavior assessment, diagnosis, stimuli, and treatment in lung function
 - a. Clinical manifestations of pulmonary alterations
 - b. Disorders of the thoracic wall and pleura
 - c. Pulmonary disorders
- X. Physiological adaptation mode: basic need - elimination
- A. Structure and function of renal and urologic systems
 - 1. Renal system structure
 - 2. Renal blood flow
 - 3. Kidney function
 - 4. Renal function test
 - 5. Geriatric considerations: Aging and renal function
 - B. Behavior assessment, diagnosis, stimuli, and treatment of urinary and renal tracts functions.
 - 1. Urinary tract obstruction
 - 2. Urinary tract infection
 - 3. Glomerular disorders
 - 4. Acute kidney injury
 - 5. Chronic kidney disease
- XI. Physiological adaptation mode: complex process - endocrine function
- A. Structure and function of reproductive systems
 - 1. Development of the reproductive systems
 - 2. Female reproductive system
 - 3. Breast structure and function
 - 4. The male reproductive system
 - 5. Aging and reproductive function
 - B. Behavior assessment, diagnosis, stimuli, and treatment in reproductive systems, including sexually transmitted diseases
 - 1. Alterations of sexual maturation
 - 2. Disorders of the female reproductive system
 - 3. Disorders of the male reproductive system
 - 4. Breast Disorders
 - 5. Sexually transmitted diseases
- XII. Physiological adaptation mode: basic need - nutrition
- A. Structure and function of the digestive system
 - 1. The gastrointestinal tract

2. Accessory digestive organs
 3. Geriatric considerations: Aging and the gastrointestinal system
 - B. Behavior assessment, diagnosis, stimuli, and treatment in digestive function
 1. Gastrointestinal disorders
 2. Disorders of accessory digestive organs
 3. Cancer in the digestive system
- XIII. Physiological adaptation mode: basic needs - protection and activity and rest
- A. Structure and function of the musculoskeletal system
 1. Bone structure and function
 2. Joint structure and function
 3. Structure and function of skeletal muscles
 4. Aging and the musculoskeletal system
 - B. Behavior assessment, diagnosis, stimuli, and treatment of musculoskeletal function
 1. Musculoskeletal injuries
 2. Bone diseases
 3. Joint diseases
 4. Musculoskeletal disorders
 5. Musculoskeletal tumors
 - C. Structure, function, and disorders of the integumentary system
 1. Skin structure and function
 2. Geriatric considerations: Aging and changes in skin integrity
 3. Skin disorders
 4. Hair disorders
 5. Nail disorders

METHODOLOGY

ON-SITE EDUCATION

Conferences
Algorithm use
Readings and study guides
Multimedia resources and movies
Case studies
Critical thinking questions
Active-learning exercise
Collaborative group work
Debates, interviews
Roleplay
Problem-based learning

DISTANCE EDUCATION

Readings
 Algorithm use
 Presentations
 Videos
 Links to web pages
 Forums: Social, discussion, questions and answers, and group.
 Assignments: Individual or group study guides, article analysis, case study discussion, and critical thinking and evidence-based questions.
 Active-learning exercises
 Debates
 Collaborative group work
 Evidence-based practice
 Problem-based learning

LEARNING EVALUATION

ON-SITE EDUCATION

Partial exams	30%
Assignments	45%
Active participation in class	5%
Guides	15%
Reflective Question	15%
Case study	10%
Final exam	25%
Total	100%

DISTANCE EDUCATION

Partial exams	30%
Assignments	45%
Forums	20%
Study guides	15%
Case study	10%
Final exam	25%
Total	100%

LEARNING ASSESSMENT

Self-diagnosis of the learning process
 Chain notes
 Focused listing
 SQA
 Concept map

BIBLIOGRAPHY

TEXT BOOK

Huether, S. E. & McCance, K.L. (2017). *Understanding Pathophysiology* (6th ed.). St. Louis MO: Mosby/Elsevier.

REFERENCES

Ignatavicius, D. D., Workman, M. L. & Rebar, C. (2018). *Medical Surgical Nursing: Concepts for Interprofessional Collaborative Care* (9th ed.). St. Louis, Missouri: Elsevier, Inc.

Kee, J. L., Hayes, E. R. & McCuiston, L. E. (2015). *Pharmacology: A Patient-Centered Nursing Process Approach* (8th ed.). St. Louis: Elsevier Saunders.

Pagana, K. & Pagana, D. (2018). *Mosby's Manual Diagnostic and Laboratory Test Reference*. (6th ed). St. Louis: Mosby.

Tortora, G. J., & Derrickson, B. (2016). *Principles of Anatomy and Physiology* (15th ed.). Hoboken, NJ: Wiley.

ELECTRONIC RESOURCES

Agency for Healthcare Research and Quality
<http://www.ahrq.gov/clinic/epcix.htm>

Centers for Disease Control and Prevention
www.cdc.gov

Code of Ethics, College of Nursing Professionals in Puerto Rico
<http://cpepr.org/sobre-nosotros/codigo-de-etica>

Healthy People 2030
<http://www.healthypeople.gov>

Institute of Health Care Improvement
<http://www.ihi.org/resources/Pages/Tools/SBARTechniqueforCommunicationASituationalBriefingModel.aspx>

National Quality Forum
<http://www.qualityforum.org/Home.aspx>

Quality and Safety Education for Nurses (QSEN)
<http://www.qsen.org>

American Heart Association
<https://www.heart.org/en/affiliates/puerto-rico/welcome-to-puerto-rico>

American Diabetes Association
<http://www.diabetes.org/newsroom/press-releases/2017/american-diabetes-association-2018-release-standards-of-medical-care-in-diabetes.html>

Find more information resources related to the course topics on the library page
<http://biblioteca.sagrado.edu/>

REASONABLE ACCOMMODATION

To obtain detailed information on the process and the required documentation, you must visit the corresponding office. To guarantee equal conditions, in compliance with the ADA (1990) and the Rehabilitation Act (1973), as amended, all students who need reasonable accommodation services or special assistance must complete the process established by the Vice Presidency for Academic Affairs.

ACADEMIC INTEGRITY

This policy applies to all students enrolled at Universidad del Sagrado Corazón to take courses with or without academic credit. A lack of academic integrity is any act or omission that does not demonstrate the honesty, transparency, and responsibility that should characterize all academic activity. Any student who fails to comply with the Honesty, Fraud, and Plagiarism Policy is exposed to the following sanctions: receive a grade of zero in the evaluation and/or repetition of the assignment in the seminar, a grade of F (*) in the seminar, suspension, or expulsion as established in the Academic Integrity Policy effective in November 2022.

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