Advanced Physiology & Pathophysiology

Course Syllabus & Teaching Module

National Institute of Advanced Nursing Education & Research

Master of Science in Nursing

August/2025

Ministry of Health and Family Welfare
Government of the People's Republic of Bangladesh

DIRECTORATE
OF NURSING SERVICES
Government of the People's Republic of Bangladesh

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NIANER Master of Science in Nursing

Advanced Physiology and Pathophysiology

Course Syllabus

Advanced Physiology and Pathophysiology

Course Information

Course Title/ Course Code	**Advanced Physiology and Pathophysiology /MSN 302**
Credit	3
Placement (Semester/Year)	1st Semester/2025
Pre-requisites	
Class Days and Times	**Sunday (9:00 am – 12:00 noon)**
Class Location	*Room # 203, Academic Building*

Contact Information

Faculty	*Name: Shariful Islam* *Email: isariful791@gmail.com* *Office: NIANER, Mugda, Dhaka Phone: 01798237780* *Name: Ela Rani Shom* *Email: elashom@yahoo.com* *Office: NIANER, Mugda, Dhaka Phone: 01552451823* *Name*: *Happy Bandana Biswas* *Email: bandana.happy@yahoo.com* *Office: NIANER, Mugda, Dhaka Phone:*

Course Materials

Required Textbook	1.McCance, K.L., & Huether, S. E. (2010). *Pathophysiology: The biologic basis for disease in adults and children. (6th ed.)* St. Louis: Mosby/Elsevier. ISBN: 978-0-323-08854-1
Recommended Textbook	1. Braun, C. A., & Anderson, C. M. (2011)*Pathophysiology: A Clinical Approach. (2nd ed.).* Philadelphia: Lippincott Williams &Wilkins ISBN : 978-1-60547-304-8 2. V. Kumar, A. Abbas, & N. Fausto. (2010). *Robbins and cotran pathologic basis of disease. (8th Ed)*. Philadelphia: Elsevier Saunders. IBSN 978-1-4160-3121-5

Course Description

Course Objectives

This nursing specialty core course provides students with an advanced understanding of physiology and pathophysiology related to human disease across the lifespan. The course content will focus on human physiology, etiology, pathogenesis, clinical manifestations, disease progression and treatment of major health problems from a cellular and body-system framework. Through this course, students will be able to relate pathophysiological process, test findings, and clinical manifestations to certain acute/chronic disease, and analyze physiological responses to illness/treatment modalities.

Student Learning Outcomes (SLOs)
: Knowledge (Cognitive)
Skills (Behavioral)
Attitudes and Values (Affective)
Abilities

1. Compare and contrast normal physiological process and pathological process across the life span.
2. Explain the etiology and internal and external risk factors with disease development and progression.
3. Relate pathophysiological process, laboratory & diagnostic test findings, and clinical manifestations to selected acute and chronic diseases.
4. Analyze physiological responses to illness and treatment modalities.

Teaching & Learning Methods

1) Lectures

2) Reading articles

3)Case study discussion

Course Evaluation

Method	Percent of Grade
Class Attendance	10%
Assignments	30%
- Case study = 10%	
- Article presentation = 10%	
- Class Participation = 10%	
Written Examination	60%
- Midterm Exam = 30%	
- Final Exam = 30%	
Total	100%

Course Outlines

Week	Faculty	Topic & Contents	Readings	Student Presentation & Case study
1 24/08/25 Sunday (9-12)	Shariful Islam Ela Rani Shom	**Course Orientation:** Topic, contents, assignment, aim, objectives, assessment & evaluation		**Reflection**
	Shariful Islam	**Pathophysiology Basic:** 1) Cell structure and reproduction, aging and death 2) Homeostasis and its importance 3) The mechanism of cellular injury and causes 4) Apply cellular adaptations and mal-adaptations to select clinical models	McCance Ch.2 Braun Ch.1, 2	Response & reflection
2 31/08/25 Sunday (9-12)	Ela Rani Shom	**Fluid and Electrolytes, Acids and Bases:** 1) Alteration in electrolytes and water balance 2) Alterations in fluid, electrolytes, and acid-base balance a. Acidosis/Alkalosis	McCance Ch.3 Braun Ch.8	Nausea and Vomiting
3 07/09/25 Sunday (9-12)	Shariful Islam	**Immune System:** 1) The structure of the immune system 2) Four types of hypersensitivity 3) Alterations of immune function a. HIV disease b. Autoimmune diseases	McCance Ch.6, 7, 8	1) AIDS 2) SLE
4 14/09/25 Sunday (9-12)	Ela Rani Shom	**Infection:** 1) Natural defense of body 2) Classes of microorganisms and infections 3) Countermeasures against pathogens	McCance Ch.9	1) Prevent disease transmission 2) Write short paper on antibiotic resistant bacterium
5 21/09/25 Sunday (9-12)	Shariful Islam	**Stress and Diseases:** 1) Concepts of stress 2) Stress Response 3) Stress and illness	McCance Ch.10	1) List stress related diseases and discuss intervention
6 28/09/25 Sunday (9-12)	Shariful Islam	**Genetics:** 1) Elements of genetics 2) Transmission of genetic diseases a. Single gene disorders b. Chromosomal disorders 3) Multifactorial disorder	McCance Ch.4, 5	1) List genetic disease and discuss

7 12/01/25 Sunday (9-12)	Happy Bandana Biswas	**Cancer:** 1) Cancer terminology and characteristics 2) The genetic basis of cancer 3) Cancer Epidemiology	McCance Ch.11, 12	1) write short summary on oncogenes & tumor suppressor genes 2) Select cancer screening test & write description
8 05/10/25 Sunday (9-12)	Ela Rani Shom	**Hematologic System:** 1) Alterations in erythrocyte function 2) Alteration in leukocyte, lymphoid, and hemostatic function	McCance Ch. 26, 27	1) Research on blood diseases 2) Role of diet in anemia 3) Vitamin B12 deficiency anemia 4) ALL
9 12/10/25		**Study Leave**		
10 19/10/25		**Midterm Examination**		
11 26/10/25 Sunday (9-12)	Shariful Islam	**The Neurologic System:** 1) Alterations in cognitive systems 2) Alteration in cerebral hemodynamics 3) Central nervous system disorders 4) Peripheral nervous system disorders	McCance Ch.16, 17	1) Acute viral encephalitis 2) Parkinson disease 3) Various Nursing intervention on stroke rehabilitation
12 02/11/25 Sunday (9-12)	Ela Rani Shom	**The Endocrine System:** 1) Mechanisms of the hormonal alteration 2) Alterations in hypothalamic-pituitary system 3) Alteration in thyroid, parathyroid system 4) Alteration in adrenal function 5) Diabetes mellitus	McCance Ch.21	1) Read research article on wound healing & diabetic & discuss their findings 2) Cushing syndrome 3) DM Type-1
13 09/11/25 Sunday (9-12)	Shariful Islam	**The Cardiovascular System:** 1) Disease of veins 2) Disease of arteries 3) Disorders of the heart wall 4) Manifestation of heart disease 5) Congenital heart defects	McCance Ch.30, 31	1) Pulm & arterial hypertension 2) Research on cyanotic & non-cyanotic H. disease 3) Hypertension 4) P. Thromboembo.

14 16/11/25 Sunday (9-12)	Ela Rani Shom	The Pulmonary System 1) Clinical manifestations of pulmonary alterations 2) Disorders of the chest wall and pleura 3) Pulmonary disorders	McCance Ch.33	1) Asthma 2) COPD 3) Plan to decrease smoking 4) Antibiotic resistant TB
15 23/11/25 Sunday (9-12)	Happy Bandana Biswas	**The Renal and Urologic System:** 1) Urinary tract obstruction 2) Urinary tract infection 3) Glomerular disorders 4) Acute kidney injury 5) Chronic kidney disease	McCance Ch.36	1) Research on types of renal calculi & Lithotripsy 2) changes occur in urinary system 3) Dialysis & renal transplantation 4) CRF
16 30/11/25 Sunday 9-12	Ela Rani Shom	The Reproductive System: 1) Female reproductive system disorders 2) Male reproductive system disorders	McCance Ch.23	1) Share perception and stories of menopause 2) Endometriosis 3) BPH
17 07/12/25 Sunday 9-12	Happy Bandana	**The Digestive System:** 1) Disorders of the gastrointestinal tract 2) Disorders of the accessory organs of digestion	McCance Ch.39	1) Research on H. *Pylori* & write a short summary 2) Prevent transmission of hepatitis virus 3) PUD 4) Esoph. varices 5) Viral Hepatitis
18 14/12/25 Sunday 9-12	Shariful Islam	**The Musculoskeletal System:** 1) Musculoskeletal injuries 2) Disorders of bone 3) Disorders of joints 4) Disorders of skeletal muscle	McCance Ch.42	1) Research on effect of soft drinks or juice on bone growth 2) Research on types of muscular dystrophy & write findings 3) Osteoarthritis 4) Osteoporosis
19 21/12/25 Sunday 9-12	Ela Rani Shom	**The Integumentary Systems:** 1) Disorders of the skin 2) Burns	McCance Ch.44, 46	
20 28/12/25	**Study Leave**			

21 04/01/26	**Final Examination**
22 11/01/26	**School Break**
23	Supplemental lectures
24	Supplemental lectures

Resources

Week	Resources
1	None
2	1. Shepherd, A. (2011) Measuring and managing fluid balance, *Nursing Times*, 107(28):12-16 2. Elgart, H.N. (2004) Assessment of fluid and electrolytes, *AACN Clinical Issues*, 15(4):607-621
3	3. Costello, K. (2013) Multiple sclerosis research: diagnosis, disease-modifying treatments , and emerging therapies, *The Journal of Neuroscience Nursing*, 45(6 suppl 1):S14-23 4. Rooney, J. (2005) Systemic lupus erythematosus: unmasking a great imitator, *Nursing*,35(11):54-60
4	5. Uchil RR, Kohil GS, Katekhaye VM, Swami OC (2014) Strategies to combat antimicrobial resistance, *Journal of Clinical Diagnostic Research*,8(7):MED01-4 6. Hannigans NS, Tolman DR, Larson EL (2012) Resisting resistance: practical decision tools for choosing antimicrobials safely, *Journal of the American Academy of Nurse Practitioners*, 24(5): 324-330
5	7. Cohen S, Janicki-Deverts D, Miller GE (2007) Psychological stress and disease, *JAMA* 298(14):1685-1687 8. Williams RB (2008), Psychosocial and biobehavioral factors and their interplay in coronary heart disease, *Annual Review of Clinical Psychology*, 4:349-365
6	9. Harvey B (2004) Down's syndrome: A biopsychosocial perspective, *Nursing Standard*, 18(30): 43-45
7	10. Lacasse C, Beck S (2007) Clinical assessment of symptom clusters, *Seminar in Oncology* Nursing, 23(2):106-112 11. Gift AG (2007) Symptom clusters related to specific cancers, *Seminar in Oncology Nursing*, 23(2):136-141
8	12. Coyer SM, Lash AA (2008) Pathophysiology of anemia and nursing care implications, *MEDSURG Nursing*, 17(2): 77-91 13. Meenagan T, Dowling M, Kelly M (2012) Acute leukemia: Making sense of a complex blood cancer, *British Journal of Nursing*, 21(2): 76-83
11	14. Collins C (2007) Pathophysiology and classification of stroke, *Nursing Standard*, 21(28): 35-39 15. Cecil S, Chen PM, Callaway SE, Rowland SM, Adler DE, Chen JW (2011) Traumatic brain injury: advanced multimodal neuromonitoring from theory to clinical practice, *Critical Care Nurse*, 31:25-37
12	16. Noble-Bell G, Cox A (2014) Management of diabetic ketoacidosis in adults, *Nursing Times*, 110(10): 14-17 17. Seggelke, S, Everhart, B (2014) Management of type 2 diabetes, *The Nurse Practitioner*, 38(6):13-16
13	18. Casey G (2013) Heart failure, *Kai Tiaki Nursing Zealand*, 19(2): 20-24 19. Smith KM, Squiers J (2013) Hypertrophic cardiomyopathy, *Critical Care Nursing Clinics of North America*, 25:263-272
14	20. Hall M (2012) Chronic obstructive pulmonary disease and asthma, *Home Healthcare Nurse*, 30(10): 603-612 21. Knechel NA (2009) Tuberculosis: Pathophysiology, clinical features, and diagnosis, *Critical Care Nurse*, 29:34-43

15	22. Ali B,Gray-Vickery P (2011) Limiting the damage from acute kidney, *Nursing2011*, 41(3): 22-31 23. Allsopp K (2011) Caring for patients with kidney failure, *Emergency Nurse*, 18(10): 12-16
16	24. McEvoy M, Chang J, Coupey SM (2004) Common menstrual disorders in adolescence, *MCN* 29(1): 41-49 (The American journal of Maternal/Child Nursing) 25. Busuttil-Leaver, R (2008) Benign prostate hyperplasia, *Practice Nurse*,36(6):19-23
17	26. Spies L (2009) Diarrhea A to Z: America to Zimbabwe, *Journal of the American Academy of Nurse Practitioners*, 21:307–313 27. Sargent S (2006) Management of patients with advanced liver cirrhosis, *Nursing Standard*, 21(11):48-56
18	28. Ashford S, Williard J (2014) Osteoarthritis: A review, *The Nurse Practitioner*, 39(5):1-8 29. Schuilling KD, Robinia K, Nye R (2011) Osteoporosis update, *Journal of Midwifery &Women's Health*, 56(6):615-627
19	30. Corcoran W, Woodward S (2013) Incontinence-associated dermatitis in the elderly: treatment options, *British Journal of Nursing*, 22(8):450-452 31. Connor-Ballard PA (2009) Understanding and managing burn pain: part 1, *The American Journal of Nursing*, 109(4):48-56 32. Connor-Ballard PA (2009) Understanding and managing burn pain: part 2, *The American Journal of Nursing*, 109(5):54-62

Course Assignment & Requirement

Essential Policy Information

1. Attendance and participation in class is expected. Excessive absence may affect the grade. If a student is unable to attend, she/he is to call or email the faculty at least one hour prior to the beginning of the class time. Failure to attend classes by missing 20% of lecture contents will result in course failure.

2. All cell phone and other electronic devices are to be turned off or set on silent mode throughout classroom hours, so that class in not disrupted.

3. Students must adhere to standards of professional and academic conduct. Academic misconduct involves any activity that tends to compromise the academic integrity of the University, or subvert the educational process, including, but not limited to, cheating, plagiarism, falsifying academic records, misrepresenting facts and any act designed to give unfair academic advantage to the student or the attempt to commit such an act. Students are responsible for their own academic honesty and for reporting violations of academic honesty by others.

Advanced Physiology and Pathophysiology

Teaching Module

Class	1	Hours	3Hours
Topic	Pathophysiology Basic		

1. Learning Outcomes

1) Explain the structure of cells and how cells reproduce, age, and die

2) Define homeostasis and explain its importance

3) Describe the relationship between homeostatic imbalance and disease

4) Describe how the disease is conducted

2. Teaching Contents and Learning Activities

Lecture

A. Topic : pathophysiology Basic

B. Resource

1) McCance(2010) Ch.2

2) Braun Ch.1, 2

C. Contents

1) Cell structure and reproduction, aging and death

2) Homeostasis and its importance

- Positive and negative feedback

3) Homeostatic imbalance and disease

- Cellular adaptations

- Maladaptive cellular responses to injury

4) The mechanism of cellular injury and causes

- The chief causes of disease

- Risk factors related to disease

5) Apply cellular adaptations and maladaptation to select clinical models

- Cardiac hypertrophy

- Cervical metaplasia and dysplasia

3. Learning Resources

Web based and electronic resources

1) World Health Organization Health Statistics: http://www.who.int

2) Healthy People 2020 Outlines the Health Goals for the United States: http://www.healthypeople.gov

3) American Heart Association. Disease and Conditions: http://www.heart.org/HEARTORG/Conditions/Conditions_UCM_001087_SubHomePagejsp

4) Center for Disease Control. National report on Human Exposure to Environmental Chemicals: http://www.cdc.gov/exposurereport/

Class	2	Hours	3Hours
Topic	Fluid and Electrolytes, Acids and Bases		

1. Learning Outcomes

1) Define isotonic, hypertonic, and hypotonic water and solute alterations

2) Identify the major consequences/manifestations of abnormal levels of electrolytes

3) Differentiate between metabolic/respiratory acidosis and metabolic/respiratory alkalosis

2. Teaching Contents and Learning Activities

Lecture

A. Topic : Fluid and Electrolytes, Acids and Bases Imbalance

B. Resource

1) McCance(2010) Ch.3

2) Braun(2011) Ch.8

C. Contents

1) Alteration in water movement

- Hypovolemia
- Hemorrhage
- Dehydration
- Hypervolemia
- Edema
- Water intoxication

2) Alterations in sodium, chloride, and water balance

- Hyponatremia/Hypernatremia
- Hypochloremia/Hyperchloremia

3) Alterations in potassium, calcium, phosphate, and magnesium balance

- Hypokalemia/Hyperkalemia

- Hypocalcemia/Hypocalcemia
- Hypophosphatemia/Hyperphosphatemia
- Hypomagnesemia/Hypermagnesemia

4) Alterations in acid-base balance
- Metabolic/Respiratory Acidosis
- Metabolic/Respiratory Alkalosis

Student Presentation and Case Study

A. Topic

1) Metabolic/respiratory acidosis or alkalosis

2) Nausea and vomiting

B. Resource

Given articles and case studies

3. Learning Resources

Suggested articles

1) Shepherd A (2011) Measuring and managing fluid balance, Nursing Times, 107(28):12-16

2) Elgart HN (2004) Assessment of fluid and electrolytes, AACN Clinical Issues, 15(4):607-621

Discuss Case Study

A. Topic

1) Nausea and Vomiting

B. Resource

Harold J. Bruyere, Jr. (2009), 100 Case studies in pathophysiology: *Wolters Kluwer*, pp 120-124

Class	3	Hours	3Hours
Topic	Immune System		

1. Learning Outcomes

1) Define innate and adaptive immunity
2) Identify the four types of hypersensitivities
3) Describe the etiology, incidence, symptoms, diagnosis, and treatment for HIV and AIDS
4) Explain AIDS as it relates to immunodeficiency
5) Describe the etiology, incidence, symptoms, diagnosis, and treatment for selected autoimmune disease

2. Teaching Contents and Learning Activities

Lecture

A. Topic : Immunologic Disorders

B. Resource

1) McCance (2010) Ch.6, 7, 8

C. Contents

1) The structure of the immune system
   - Specific immunity
   - Nonspecific immunity
   - Cell-mediated and humoral immunity
2) Four types of hypersensitivity
   - Type I
   - Type II
   - Type III
   - Type IV
3) Human Immunodeficiency Virus (HIV)

- Current stats on HIV infection
- Pathogenesis of HIV infection
- Pediatric AIDS

4) Autoimmune diseases
- Define autoimmunity and autoantibodies
- Systemic Lupus Erythematosus (SLE)
- Transfusion reactions

Student Presentation and Case Study

A. Topic

1) AIDS

2) SLE

B. Resource

Given articles and case studies

3. Learning Resources

Suggested articles

1) Costello K (2013) Multiple sclerosis research: diagnosis, disease-modifying treatments , and emerging therapies, *The Journal of Neuroscience Nursing*, 45(6 suppl 1):S14-23

2) Rooney J (2005) Systemic Lupus Erythematosus: unmasking a great imitator, *Nursing*, 35(11):54-60

Discuss Case study

A. Topic

1) AIDS

2) SLE

B. Resource

Harold J. Bruyere, Jr. (2009), *100 Case studies in Pathophysiology*: Wolters Kluwer, pp 356-365

Web based and electronic resources

1) Centers for Disease Control and Prevention. Data & Statistics. HIV/AIDS

http://www.cdc.gov/hiv/statistics/index.html

2) AIDSinfo/Information on HIV/AIDS Treatment, Prevention, and Research

http://aidsinfo.nih.gov/

Class	4	Hours	3Hours
Topic	Infection		

1. Learning Outcomes

1) Describe and compare the characteristics of virus, bacteria, fungi, and parasites

2) Explain treatment for viral, bacterial, fungal, and parasitic infectious diseases

3) Understand the appropriate use of antibiotics and vaccination

2. Teaching Contents and Learning Activities

Lecture

A. Topic : Infection

B. Resource

1) McCance (2010) Ch.9

C. Contents

1) Natural defense of body

- Process of infection

2) Classes of microorganisms and infections

- Virus
- Bacteria
- Fungus
- Parasites

3) Countermeasures against pathogens

- Antimicrobials
- Active immunization : vaccines
- Passive immunotherapy

Student Presentation and Case Study

A. Topic

1) Have students list ways to prevent disease transmission and discuss the suggestions in class.

2) Have students research and write a short paper on one antibiotic-resistant bacterium.

B. Resource

Given articles and case studies

3. Learning Resources

Suggested articles

1) Uchil RR, Kohil GS, Katekhaye VM, Swami OC (2014) Strategies to combat antimicrobial resistance, *Journal of Clinical Diagnostic Research*, 8(7):MED01-4

2) Hannigans NS, Tolman DR, Larson EL (2012) Resisting resistance: practical decision tools for choosing antimicrobials safely, *Journal of the American Academy of Nurse Practitioners*, 24(5): 324-330

Discuss Case study

A. Topic

1) Genital Herpes

B. Resource :

Harold J. Bruyere, Jr. (2009), 100 Case studies in Pathophysiology: *Wolters Kluwer*, pp 474-478

Web based and electronic resources

Centers for Disease Control and Prevention. Diseases and Conditions

http://www.cdc.gov/DiseasesConditions/

Class	5	Hours	3Hours
Topic	Stress and Diseases		

1. Learning Outcomes

1) Explain the concept of general adaptation syndrome

2) Describe neuronal and hormonal stress response

3) Describe stress-related diseases and adaptive coping strategies

2. Teaching Contents and Learning Activities

Lecture

A. Topic : Stress

B. Resource

1) McCance (2010) Ch.10

C. Contents

1) Concepts of stress

- General adaptation syndrome
- Psychologic and psychoimmunologic mediators of stress

2) Stress response

- Neuronal response
- Hormonal response

3) Stress and illness

- Stress-related diseases
- Adaptive coping strategies

Student Presentation and Case Study

A. Topic

1) Have students list stress-related diseases and discuss the interventions in class.

B. Resource

Given articles

3. Learning Resources

Suggested articles

1) Cohen S, Janicki-Deverts D, Miller GE (2007) Psychological stress and disease, *JAMA* 298(14):1685-1687

2) Williams RB (2008), Psychosocial and biobehavioral factors and their interplay in coronary heart disease, *Annual Review of Clinical Psychology*, 4:349-365

Class	6	Hours	3Hours
Topic	Genetics		

1. Learning Outcomes

1) Describe mechanisms of transmission of genetic disease

2) Explain genetic disease based on abnormal chromosome aberrations

3) Describe genetic disease involving sex chromosomes

4) Explain principles of multifactorial inheritance

2. Teaching Contents and Learning Activities

Lecture

A. Topic : Genetic Disorders

B. Resource

1) McCance (2010) Ch.4, 5

C. Contents

1) Elements of genetics

- Genotype and phenotype
- Dominance and recessiveness

2) Transmission of genetic diseases

- Single gene disorder
- X-linked genetic disorder
- Chromosomal disorder

3) Multifactorial disorder

- Coronary heart disease
- Hypertension
- Diabetes mellitus
- Psychiatric disease

Student presentation and case study

A. Topic

1) Have students list genetic diseases and discuss in class.

B. Resource

Given articles

3. Learning Resources

Suggested articles

Harvey B (2004) Down's syndrome: A biopsychosocial perspective, Nursing Standard, 18(30): 43-45

Discuss Case study

A. Topic

1) Down syndrome

B. Resource

Harold J. Bruyere, Jr. (2009), 100 Case studies in Pathophysiology: *Wolters Kluwer* pp 286-290

Class	7	Hours	3Hours
Topic	Cancer		

1. Learning Outcomes

1) Describe cancer classification

2) Explain the genetic basis of cancer

3) Describe the epidemiology, etiology, symptoms, diagnosis, and treatment of common cancers

4) Understand the value of cancer prevention, early detection, and screening of cancer

2. Teaching Contents and Learning Activities

Lecture

A. Topic : Cancer

B. Resource : McCance (2010) Ch.11,12

C. Lecture contents

1) Cancer terminology and characteristics

- Tumor classification and nomenclature

- The biology of cancer cells

2) The genetic basis of cancer

- Cancer-causing mutations in genes

- Inflammation, immunity and cancer

- Cancer invasion and metastasis

3) Cancer epidemiology

- Risk factors

Student Presentation and Case Study

A. Topic

1) Have students research oncogenes and tumor suppressor genes and write a short summary of

what they found.

2) Have students select a recommended cancer screening test and write a short description of the test.

B. Resource

Given articles and case studies

3. Learning Resources

Suggested articles

1) Lacasse C, Beck S (2007) Clinical assessment of symptom clusters, *Seminar in Oncology* Nursing, 23(2):106-112

2) Gift AG (2007) Symptom clusters related to specific cancers, *Seminar in Oncology Nursing*, 23(2):136-141

Discuss Case study

A. Topic

1) Colorectal cancer

2) Breast cancer

B. Resource

Harold J. Bruyere, Jr. (2009), *100 Case studies in Pathophysiology*, Wolters Kluwer, pp 88-92, 300-304

Web based and electronic resources

National Cancer Institute

http://www.cancer.gov/cancertopics

http://www.cancer.gov/statistics

Class	8	Hours	3Hours
Topic	Hematologic System		

1. Learning Outcomes

1) Delineate the function of red blood cells, white blood cells, and platelets

2) Describe the etiology, incidence, symptoms, diagnosis, and treatment for selected diseases of the blood

2. Teaching Contents and Learning Activities

Lecture

A. Topic : Hematological Disorders

B. Resource

1) McCance (2010) Ch. 26, 27

C. Contents

1) Alterations in erythrocyte function

- Anemia
- Polycythemia

2) Alteration in leukocyte, lymphoid, and hemostatic function

- Infectious mononucleosis
- Leukemia
- Disorders of platelets and coagulation

Student Presentation and Case Study

A. Topic

1) Have students do additional research on one of the blood diseases in This chapter.

2) Have students discuss the role of diet in anemia.

B. Resource

Given articles and case studies

3. Learning Resources

Suggested articles

1) Coyer SM, Lash AA (2008) Pathophysiology of anemia and nursing care implications, *MEDSURG Nursing*, 17(2): 77-91

2) Meenagan T, Dowling M, Kelly M (2012) Acute leukemia: Making sense of a complex blood cancer, *British Journal of Nursing*, 21(2): 76-83

Discuss Case study

A. Topic

1) Vitamin B12 deficiency anemia

2) Acute lymphoblastic leukemia

B. Resource

Harold J. Bruyere, Jr. (2009), 100 *Case studies in Pathophysiology*: Wolters Kluwer, pp 431-437, 406-410

Class	12	Hours	3Hours
Topic	Neurologic System		

1. Learning Outcomes

1) Describe the etiology, incidence, symptoms, diagnosis, and treatment of seizure disorders
2) Describe the etiology, incidence, symptoms, diagnosis, and treatment of stroke or related cerebrovascular disorders
3) Describe the etiology, incidence, symptoms, diagnosis, and treatment of central nervous system disorders
4) Describe the etiology, incidence, symptoms, diagnosis, and treatment of peripheral nervous system disorders

2. Teaching Contents and Learning Activities

Lecture

A. Topic : Neurological Disorders

B. Resource

1) McCance (2010) Ch. 26, 27

C. Contents

1) Alterations in cognitive systems
   - Seizures
2) Alteration in cerebral hemodynamics
   - Cerebral hemorrhage
   - Hydrocephalus
3) Central nervous system disorders
   - Head and spinal cord injury
   - Meningitis
   - Multiple sclerosis
   - Neurodegenerative disease

4) Peripheral nervous system disorders

- Myasthenia gravis

Student Presentation and Case Study

A. Topic

1) Have students discuss various nursing interventions to help rehabilitation for stroke patients

B. Resource

Given articles and case studies

3. Learning Resources

Suggested articles

1) Collins C (2007) Pathophysiology and classification of stroke, *Nursing Standard*, 21(28): 35-39

2) Cecil S, Chen PM, Callaway SE, Rowland SM, Adler DE, Chen JW (2011) Traumatic brain injury: Advanced multimodal neuromonitoring from theory to clinical practice, *Critical Care Nurse*, 31:25-37

Discuss Case study

A. Topic

1) Acute viral encephalitis

2) Parkinson disease

B. Resource :

Harold J. Bruyere, Jr. (2009), *100 Case studies in Pathophysiology*: Wolters Kluwer. pp 172-176, 211-217

Web based and electronic resources

National Stroke Association

http://www.stroke.org/

Class	13	Hours	3Hours
Topic	Endocrine System		

1. Learning Outcomes

1)Identify the hormones secreted from each endocrine gland and their normal functions

2) Describe the consequences of hyposecretion and hypersecretion of endocrine hormones on various glands and organs

3) Identify the etiology, signs and symptoms, diagnostic tests, and treatment for type 1 and type 2 diabetes

4) Compare and contrast the consequences of type 1 and type 2 diabetes

5) Describe the acute and chronic complications of diabetes

2. Teaching Contents and Learning Activities

Lecture

A. Topic : Endocrine Disorder

B. Resource

1) McCance (2010) Ch. 21

C. Contents

1) Mechanisms of the hormonal alteration

2) Alterations in hypothalamic-pituitary system

- Disease of anterior pituitary

- Disease of posterior pituitary

3) Alteration in thyroid, parathyroid system

- Hyper-, Hypo-thyroidism

- Hyper-, Hypo-parathyroidism

4) Alteration in adrenal function

- Disorders of the adrenal cortex

- Disorders of the adrenal medulla

5) Diabetes mellitus

- Types of diabetes mellitus

- Complications of diabetes mellitus

Student Presentation and Case Study

A. Topic

1) Have students research wound healing and diabetics and write discuss their findings

B. Resource

Given articles and case studies

3. Learning Resources

Suggested articles

1) Noble-Bell G, Cox A (2014) Management of diabetic ketoacidosis in adults, *Nursing Times*, 110(10): 14-17

2) Seggelke, S, Everhart, B (2014) Management of type 2 diabetes, *The Nurse Practitioner*, 38(6):13-16

Discuss Case study

A. Topic

1) Cushing syndrome

2) Diabetes mellitus, type 1

B. Resource :

Harold J. Bruyere, Jr. (2009), *100 Case studies in Pathophysiology*, Wolters Kluwer, pp 249-252, 253-257

Web based and electronic resources

American Diabetes Association

http://www.diabetes.org/

Class	14	Hours	3Hours
Topic	Cardiovascular System		

1. Learning Outcomes

1) Describe the key characteristics of the diseases of the arterial circulation and heart
2) Describe the etiology, signs, and risks associated with peripheral vascular diseases
3) Describe the etiology, signs, and risks associated with arterial vascular diseases
4) Differentiate between endocardial and myocardial diseases of the heart
5) Explain the different types of atrial and ventricular arrhythmias
6) Describe the epidemiology, symptoms, etiology, diagnosis, and treatment of congenital heart abnormalities

2. Teaching Contents and Learning Activities

Lecture

A. Topic : Cardiovascular Disorder

B. Resource

1) McCance (2010) Ch. 30, 31

C. Contents

1) Disease of veins
   - Varicose veins
   - Deep vein thrombosis
2) Disease of arteries
   - Aneurysm
   - Embolism
   - Hypertension
   - Atherosclerosis
   - Coronary artery disease, Myocardial infarction
3) Disorders of the heart wall

- Disorders of pericardium, myocardium, endocardium

4) Manifestation of heart disease

- Heart failure

- Dysrhythmias

5) Congenital heart defects

- Classification of congenital heart defects and associated conditions

Student Presentation and Case Study

A. Topic

1) Have students define pulmonary hypertension and arterial hypertension

2) Have students research and differentiate cyanotic or noncyanotic heart diseases

B. Resource

Given articles and case studies

3. Learning Resources

Suggested articles

1) Casey G (2013) Heart Failure, Kai Tiaki Nursing Zealand, 19(2): 20-24

2) Smith KM, Squiers J (2013) Hypertrophic cardiomyopathy, *Critical Care Nursing Clinics of North America*, 25:263-272

Discuss Case study

A. Topic

1) Hypertension

2) Pulmonary thromboembolism.

B. Resource

Harold J. Bruyere, Jr. (2009), *100 Case studies in Pathophysiology*: Wolters Kluwer, pp 18-22, 34-38

Web based and electronic resources

American Heart Association

http://www.heart.org

Class	15	Hours	3Hours
Topic	Pulmonary System		

1. Learning Outcomes

1) Compare and contrast upper and lower respiratory tract infections
2) Define COPD and name examples, causes, and treatments
3) Discuss the causes and treatments of emphysema
4) Describe the various forms of pneumonia, and manifestations, causes, and treatments
5) Describe the signs, symptoms, diagnosis, treatment, and prevention of tuberculosis

2. Teaching Contents and Learning Activities

Lecture

A. Topic : Pulmonary Disorder

B. Resource

1) McCance (2010) Ch. 33

C. Contents

1) Clinical manifestations of pulmonary alterations
   - Sign and symptoms
   - Conditions caused by pulmonary disease or injury
2) Disorders of the chest wall and pleura
   - Pneumothorax
   - Pleural effusion
3) Pulmonary disorders
   - Restrictive disorders : Atelectasis, Bronchiolitis, Pulmonary fibrosis, Pulmonary edema, ARDS
   - Obstructive disorders : Asthma, COPD, Emphysema,
   - Respiratory tract infections : Pneumonia, Tuberculosis, Pulmonary embolism, Cor pulmonale

Student Presentation and Case Study

A. Topic

1) Have students design a plan to decrease smoking in Bangladesh
2) Have students research antibiotic resistant TB and write a short summary on their findings.

B. Resource

Given articles and case studies

3. Learning Resources

Suggested articles

1) Hall M (2012) Chronic obstructive pulmonary disease and asthma, *Home Healthcare Nurse*, 30(10): 603-612

2) Knechel NA (2009) Tuberculosis: Pathophysiology, clinical features, and diagnosis, *Critical Care Nurse*, 29:34-43

Discuss Case study

A. Topic

1) Asthma

2) COPD

B. Resource

Harold J. Bruyere, Jr. (2009), *100 Case studies in Pathophysiology*: Wolters Kluwer, pp 49-53, 60-64

Web based and electronic resources

American Lung association

http://www.lung.org

Class	16	Hours	3Hours
Topic	Renal and Urologic System		

1. Learning Outcomes

1) Explain how urinary tract infections or dysfunctions affect other organ systems
2) Describe the etiology, signs and symptoms, diagnostic tests, and treatment of urinary tract infections (UTIs)
3) Identify the etiology, signs and symptoms, diagnostic tests, and treatment for selected chronic kidney diseases

2. Teaching Contents and Learning Activities

Lecture

A. Topic : Urologic Disorder

B. Resource

1) McCance (2010) Ch. 36

C. Contents

1) Urinary tract obstruction
   - Kidney stones
   - Neurogenic bladder, Overactive bladder syndrome
2) Urinary tract infection
3) Glomerular disorders
   - Glomerulonephritis
   - Nephrotic syndrome
4) Acute kidney injury
5) Chronic kidney disease
   - Renal failure

Student Presentation and Case Study

A. Topic

1) Have students research various types of kidney stones (renal calculi) and lithotripsy

2) Have students research what changes occur in the urinary system during aging

B. Resource

Given articles and case studies

3. Learning Resources

Suggested articles

Ali B,Gray-Vickery P (2011) Limiting the damage from Acute Kidney, *Nursing*2011, 41(3): 22-31

Allsopp K (2011) Caring for patients with kidney failure, *Emergency Nurse*, 18(10): 12-16

Discuss Case study

A. Topic

1) Dialysis and renal transplantation

2) Chronic renal failure

B. Resource

Harold J. Bruyere, Jr. (2009), *100 Case studies in Pathophysiology*: Wolters Kluwer, pp 149-153, 145-148

Class	17	Hours	3Hours
Topic	Reproductive System		

1. Learning Outcomes

1) List signs and symptoms, causes, and treatments of diseases and disorders of the reproductive systems

2) Describe disorders of pregnancy

2. Teaching Contents and Learning Activities

Lecture

A. Topic : Reproductive disorder

B. Resource

1) McCance (2010) Ch. 23

C. Contents

1) Female reproductive system disorders

- Hormonal and menstrual alterations
- Infection and inflammation
- Pelvic organ prolapse
- Impaired fertility

2) Male reproductive system disorders

- Disorders of the urethra
- Disorders of the penis
- Disorders of the scrotum, testis, and epididymis
- Disorders of the prostate gland

Student Presentation and Case Study

A. Topic

1) Have students share perceptions and stories of menopause.

B. Resource

Given articles and case studies

3. Learning Resources

Suggested articles

1) McEvoy M, Chang J, Coupey SM (2004) Common menstrual disorders in adolescence, *MCN* 29(1): 41-49 (The American journal of Maternal/Child Nursing)

2) Busuttil-Leaver, R (2008) Benign prostate hyperplasia, *Practice Nurse*, 36(6):19-23

Discuss Case study

A. Topic

1) Endometriosis

2) Benign prostate hyperplasia

B. Resource

Harold J. Bruyere, Jr. (2009), *100 Case studies in Pathophysiology*: Wolters Kluwer, pp 310-317, 334-339

Web based and electronic resources

U.S. Department of Health and Human Services

www.girlpower.gov/

Class	18	Hours	3Hours
Topic	Digestive System		

1. Learning Outcomes

1) Describe the key characteristics of major diseases of the digestive tract
2) Explain the etiology of gastrointestinal diseases
3) Name the diagnostic tests for diseases of the digestive tract
4) Describe the etiology, signs and symptoms, diagnostic tests, and treatment for liver, gall bladder, and pancreatic diseases

2. Teaching Contents and Learning Activities

Lecture

A. Topic : Digestive Disorder

B. Resource

1) McCance (2010) Ch. 39

C. Contents

1) Disorders of the gastrointestinal tract
   - Gastritis, peptic ulcer
   - Inflammatory bowel disease : Ulcerative colitis, Crohn disease, Diverticular disease
2) Disorders of the accessory organs of digestion
   - Liver cirrhosis
   - Viral hepatitis
   - Cholelithiasis (gall stones), cholecystitis
   - Pancreatitis

Student presentation and case study

A. Topic

1) Have students research the discovery of *H. pylori* and write a short summary on what they found.

2) Have students discuss to prevent transmission of the hepatitis virus.

B. Resource

Given articles and case studies

3. Learning Resources

Suggested articles

Spies L (2009) Diarrhea A to Z: America to Zimbabwe, Journal of the American Academy of Nurse Practitioners, 21:307–313

Sargent S (2006) Management of patients with advanced liver cirrhosis, *Nursing Standard*, 21(11):48-56

Discuss Case study

A. Topic

1) Peptic ulcer disease

2) Esophageal varices

3) Viral hepatitis

B. Resource

Harold J. Bruyere, Jr. (2009), *100 Case studies in Pathophysiology*: Wolters Kluwer, pp 125-127, 107-110, 133-139

Web based and electronic resources

American Association for the Study of Liver diseases

http://www.aasld.org/

American Gastroenteological Association

http://www.gastro.org/

Class	19	Hours	3Hours
Topic	Musculoskeletal System		

1. Learning Outcomes

1) Describe the etiology, signs and symptoms, diagnostic tests and treatment of mechanical and infectious diseases of bone
2) Describe the etiology, signs and symptoms, diagnostic tests, and treatment of the common types of arthritis, and gout
3) Describe the etiology, signs and symptoms, diagnostic tests, and treatment of muscular dystrophy

2. Teaching Contents and Learning Activities

Lecture

A. Topic : Musculoskeletal Disorder

B. Resource

1) McCance (2010) Ch. 42

C. Contents

1) Musculoskeletal injuries
   - Fractures
   - Sprains and strains
2) Disorders of bone
   - Metabolic bone diseases : Osteoporosis, Paget disease
   - Infectious bone diseases : Osteomyelitis
3) Disorders of joints
   - Osteoarthritis & Rheumatoid arthritis
   - Gout
4) Disorders of skeletal muscle
   - Muscular dystrophy

- Muscle tumors

Student Presentation and Case Study

A. Topic

1) Have students research on the effect of soft drinks or juice on bone growth and discuss on parents giving their young children soft drinks or juice instead of milk.

2) have students research the different types of muscular dystrophy and write a short summary on their findings

B. Resource

Given articles and case studies

3. Learning Resources

Suggested articles

Ashford S, Williard J (2014) Osteoarthritis: A review, The Nurse Practitioner, 39(5):1-8

Schuilling KD, Robinia K, Nye R (2011) Osteoporosis update, *Journal of Midwifery &Women's Health*, 56(6):615-627

Discuss Case study

A. Topic

1) Osteoarthritis

2) Osteoporosis

B. Resource

Harold J. Bruyere, Jr. (2009), *100 Case studies in Pathophysiology*: Wolters Kluwer, pp 370-375, 376-381

Web based and electronic resources

National Osteoposis Foundation

http://nof.org

National Institute of Arthritis and Musculoskeletal and Skin Diseases

http://www.niams.nih.gov

Class	20	Hours	3Hours
Topic	Integumentary Systems		

1. Learning Outcomes

1)Identify the hormones secreted from each endocrine gland and their normal functions

2) Describe the consequences of hyposecretion and hypersecretion of endocrine hormones on various glands and organs

3) Identify the etiology, signs and symptoms, diagnostic tests, and treatment for type 1 and type 2 diabetes

4) Compare and contrast the consequences of type 1 and type 2 diabetes

5) Describe the acute and chronic complications of diabetes

2. Teaching Contents and Learning Activities

Lecture

A. Topic : Integumentary Disorder

B. Resource

1) McCance (2010) Ch. 44, 46

C. Contents

1) Disorders of the skin

- Skin lesions
- Inflammatory disorders : Dermatitis, Psoriasis, Acne
- Infections : Bacterial, Viral, Fungal infection
- Vascular disorders : Urticaria, Scleroderma
- Insect bites
- Benign tumors and cancers

2) Burns

- Epidemiology and Etiology

- Burn wound depth

Student Presentation and Case Study

A. Topic

1) Have students research pressure sore treatment and diet and discuss how to prevent pressure sores

2) Have students compare and contrast UVA and UVB ultraviolet rays and discuss how these rays are responsible for skin cancers

B. Resource

Given articles and case studies

3. Learning Resources

Suggested articles

1) Corcoran W, Woodward S (2013) Incontinence-associated dermatitis in the elderly: treatment options, *British Journal of Nursing*, 22(8):450-452

2) Connor-Ballard PA (2009) Understanding and managing burn pain: part 1, *The American Journal of Nursing*, 109(4):48-56

3) Connor-Ballard PA (2009) Understanding and managing burn pain: part 2, *The American Journal of Nursing*, 109(5):54-62

Discuss Case study

A. Topic

1) Acne Vulgaris

2) Psoriasis

B. Resource

Harold J. Bruyere, Jr. (2009), 100 Case studies in Pathophysiology*: Wolters Kluwer*, pp 388-391, 400-405

Web based and electronic resources

1) National Institute of Arthritis and Musculoskeletal and Skin Diseases

http://www.niams.nih.gov

2) The Skin Cancer Foundation

http://www.skincancer.org

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Resources