

Syllabus-Pathophysiology

Course number: BIO 219

Course title: Pathophysiology

Number of credits: 3

Course instructor: Michelle Johnson, email: michelle.johnson246@doane.edu

Course description:

An introduction to the basic concepts of pathophysiology. Students examine the phenomena that produce alterations in human physiologic function and the resulting human response. Upon completion of the course, students will understand pathophysiological changes, including how pathological processes are manifested, progress in the body, and primary and secondary effects.

This is an intense course focusing on pathological factors that influence the disease process. In order to discuss and comprehend the vast amount of information covered in eight weeks students must come to class well prepared; that is, reading and studying the assigned chapters prior to lecture. Students must have an understanding of normal functions of the body systems in order to understand the abnormal functions and manifestations of the disease process; therefore, Anatomy and Physiology I & II are prerequisites for this class.

Required textbook & Study Guide:

Huether, S. E., & McCance, K. L. (2004). Understanding Pathophysiology (4th ed.) St. Louis, MO: Mosby Elsevier.

Course objectives:

- Describe the basic concepts of pathophysiology at the cellular level related to injury, the self-defense mechanism, mutation, and cellular proliferation
- Outline basic pathological factors that influence the disease process
- Outline the various pathological processes related to the targeted body systems

- Describe the impact and abnormal functions upon the organ(s) associated with the disease process of targeted body systems
- Describe clinical manifestations associated with the diseased organ(s)
- Develop basic critical thinking skills that correlate the abnormal functions of body systems with the disease process

Course layout:

Two comprehensive exams will be given during the eight-week session. In addition, a quiz will be given at the beginning of each lecture starting with the second lecture. **Due to the specialization of pediatric pathophysiology I will only mention significant pediatric diseases. In this course our focus will be on adult pathophysiology.** The following topics will be covered during the eight-week session.

Lecture 1:

- 1. Foundations of pathophysiology: the cell- Review chapters 1& 2, Read chapter 3**
 - Cellular adaptation
 - Cellular injury
 - Manifestations of cellular injury
 - Cellular aging and death
- 2. Inflammation: innate defenses- Read chapters 5,6,7 & 8**
 - Acute inflammation: vascular changes, cellular components, cellular products, local and systemic manifestations
 - Chronic inflammation: role of the lymph system, systemic manifestations
- 3. Cellular repair- Review chapters 5,6 & 7**
 - Cellular regeneration
 - Dysfunctional wound healing
 - Cell immunity: cell mediated immune response
 - Review inflammatory-reparative response
- 4. Disorders of the immune system- Review chapters 7 & 8**

- Hypersensitivity
- Infection
- Deficiencies: immunodeficiency diseases
- Autoimmune diseases
- Stress response and the immune system

Lecture 2:

5. Cellular proliferation: Cancer- Read chapters 9, 10 & 11; quiz covering chapters 3, 5-8

- Characteristics: classification, nomenclature, & markers
- Etiology: genetic mutations , epidemiology, and environmental
- Metastasis
- Clinical manifestations
- Treatment and adverse effects
- Childhood cancer

6. Pathophysiology of the hematologic system- Review chapter 19, Read chapter 20 & 21

- Hematologic disorders: blood dyscrasia
- Leukemia and lymphoma
- Alteration in coagulation: hemorrhage and thrombosis
- Cerebral vascular accident, transient ischemic accident
- Thrombocytopenia, polycythemia

Lecture 3:

Comprehensive Exam I

7. Pathophysiology of the cardiovascular- Review chapter 22, Read chapter 23 & 24

- Vascular diseases
- Disorders of the heart
- Heart disease and failure

- Shock
- Congenital heart disease
- Acquired cardiovascular disorders

8. Pathophysiology of the pulmonary system- Review chapter 25, Read chapter 26 & 27

- Respiratory disease: restrictive, obstructive
- Acute respiratory distress and pulmonary edema
- Chronic obstructive pulmonary disease
- Respiratory infections
- Carcinomas: lip and lung
- Sudden infant death syndrome

Lecture 4:

9. Pathophysiology of the renal system- Review chapter 28, Read chapters 4, 29 & 30; quiz covering chapters 20, 21, 23, 24, 26 & 27

- Fluid, electrolytes, and acid-base imbalance
- Anemia-erythropoiesis
- Edema, ascites, third spacing
- Glomerular disorders
- Renal failure
- Urinary tract obstruction, infections

10. Pathophysiology of infectious disease- Review chapter 7, 9, & 10 read pp. 184-205, 235-238, 252, & 1096-1107

- Invasion of infectious agents
- Infectious agents causing disease: viral, bacterial
- Immune/inflammatory response to microbes
- HIV and AIDS
- HPV

11. Pathophysiology of the integumentary system- Read chapter 39 & 40

- Disorders of the skin
- Burn
- Disorders of the hair
- Disorders of the nails
- Insect bites and parasites

Lecture 5:

12. Pathophysiology of the digestive system- Review chapter 33, Read chapter 34 & 35; quiz covering chapters 4, 7, 29, 30, 39, 40 & assigned pages

- Gastrointestinal disorders
- Appendicitis
- Accessory organs and dysfunction: liver, gall bladder, pancreas
- Cancer of gastrointestinal tract and accessory organs

13. Pathophysiology of the endocrine system- Read 17 & 18

- Hormonal dysfunction
- Hypothalamic – pituitary disorders
- Thyroid – parathyroid disorders
- Pancreatic dysfunction: diabetes mellitus
- Adrenal dysfunctions

Lecture 6:

14. Pathophysiology of the musculoskeletal system- Review chapter 36, Read chapters 37 & 38; quiz covering chapters 17, 18, 34 & 35

- Injury to the musculoskeletal system
- Bone disorders
- Joint disorders
- Musculoskeletal disorders
- Musculoskeletal carcinomas

**15. Pathophysiology of the reproductive systems-Review chapter 31,
Read chapter 32**

- Alteration in sexual maturation
- Disorders of the female reproductive system
- Disorders of the male reproductive system
- Disorders of the breast
- Sexually transmitted infections

Lecture 7:

**16. Pathophysiology of the neurologic system- Review chapters 12 & 13,
Read chapters 14, 15, & 16; quiz covering chapters 14, 15, 16, 32, 37
& 38**

- Alteration in cerebral homeostasis
- Central nervous system disorders
- Peripheral nervous system disorders
- Carcinomas: cranial, spinal cord

17. Review for comprehensive final

Lecture 8:

18. Comprehensive final

Course policies:

- **Attendance:** Student attendance and participation are expected at each lecture throughout the eight week session. In case of an emergency or illness contact either myself or an appropriate Doane college official.

- **Preparation:** It is expected that the student will come to class prepared; that is, having read and studied the assigned textbook pages.
- **Grading:** The student's grade will consist of two comprehensive exams and weekly quizzes at the beginning of each lecture.
- **Grading scale:**
 - 100-96% = A+
 - 95-93% = A
 - 92-90% = A-
 - 89-86% = B+
 - 85-83% = B
 - 82-80% = B-
 - 79-76% = C+
 - 75-70% = C
 - 69-60% = D
 - < 59% = F
- **Academic integrity:** I adhere strictly to the Doane College Academic Integrity Policy that states the student must represent his/her own work on all tests, quizzes, and projects. Failure to cite sources of others' ideas and words is considered plagiarism and will result in a penalty to be determined by the dean of undergraduate studies and the instructor.

The human body is amazing! I look forward to furthering your understanding of the etiology behind the disease process and the respective clinical manifestations.

