

Syllabus

Course Title: Pathophysiology

Course Code: 72120210

Teaching Hours per week: 5-0

Credit Value: 2.5

Course Status: Compulsory

Prerequisites: Human anatomy, Human physiology, Biochemistry, Cellular and molecular biology

Course Description:

Pathophysiology is a medical science concerning the etiology and pathogenesis of diseases, as well as the mechanisms of functional and metabolic alterations in diseases. It provides a link between the sciences of anatomy, physiology, biochemistry and clinical practice. Emphasis is placed on the mechanisms and concepts of most commonly encountered diseases and disorders to the human body. Selected lectures include fever, hypoxia, stress, shock, disturbances of hemostasis, abnormal cell proliferation and differentiation, heart failure, etc. These may provide awareness of possible implications for certain aspects of diseases, current scientific advances and therapeutic options. The course aims to enable students to apply scientific reasoning skills to the study of human diseases.

Course objectives:

The objectives of this course are to enable students to possess a well-grounded understanding of normal physiological and pathological mechanisms of diseases. And we also try to let the clinical students apply the pathophysiological knowledge to interpret the changes of normal mechanical, physical and biochemical functions that result in symptoms indicative of diseases. Students will have the opportunity to apply knowledge of pathophysiology in conjunction with information regarding medical history and laboratory data to analyze the cases based on clinical problems in small group discussion. Upon satisfactory completion of this course, the student will be able to:

1. Understand the basic mechanisms involved in disease occurrence and the responses of the body to the pathogenic factors in disease processes.
2. Analyze various pathways in which innate adaptive and compensatory physiological mechanisms are affected by specific pathogenic factors.

3. Analyze the relationship between normal physiological and pathological phenomena in diseases.
4. Correlate alterations in the physiological functions of the human body to clinical presentation of signs and symptoms.
5. Develop clinical inferences based on the knowledge of pathophysiology.
6. Present and communicate with knowledge of the course contents clearly and accurately.
7. Form the knowledge basis for the development of personal skills in the use of laboratory and clinical technology.

Course Content:

Topic	class hours
Conspectus of Disease	3
Signal transduction and the Related Disorders	2
Cell apoptosis and the Related Disorders	2
liver failure (Quiz)	3
Metabolic syndrome	2
Fluid and Electrolyte Balance & Imbalance	3
Acid-Base Balance and Imbalance (Quiz)	2
Stress, Hypoxia	3
Fever (Quiz)	2
Shock (Quiz)	3
DIC (Disseminated intravascular coagulation)	2
Renal Failure (Quiz)	3
Ischemia-Reperfusion Injury Respiratory Failure	2
Heart Failure (Quiz)	3
Respiratory Failure	2
Tumor (Quiz)	3
Brain dysfunction	2

Outline of Instruction:

Conspectus of Disease

- Describe the definition of health and disease.
- Explain the etiology and pathogenesis of disease.

- Discuss the outcome of disease.

Signal Transduction and the Related Disorders

- Describe the general concept and major pathways of signal transduction.
- Explain the dysfunction of signal transduction in diseases.
- Introduce the therapeutic principles for signal transduction related disorders.

Cell apoptosis and the Related Disorders

- Describe the general concept and biochemical mechanism of apoptosis.
- Describe cell apoptosis related disorders.
- Explain the prevention and treatment of apoptosis related disorders.

Liver failure

- Describe the etiology and pathogenesis of liver failure.
- Describe the etiology, classification and pathogenesis of hepatic encephalopathy.
- Describe the prevention and treatment of liver failure.

Metabolic syndrome

- Describe the etiology and pathogenesis of metabolic syndrome.
- Explain the mechanisms of metabolic syndrome.
- Describe the prevention and treatment of metabolic syndrome.

Fluid and Electrolyte Balance & Imbalance

- Describe the fluid and electrolyte balance.
- Explain the disorders of water and sodium imbalance.
- Explain the disorders of potassium metabolism.
- Explain the disorders of calcium and phosphorus metabolism.

Acid-Base Balance and Imbalance

- Describe the acid-base balance.
- Describe the disorders of acid-base imbalance.
- Explain the mechanisms of acid-base imbalance related disorders.

Stress

- Describe the etiology and pathogenesis of stress.
- Describe the manifestations of stress related disorders.
- Explain the mechanisms and treatments for stress related disorders.

Hypoxia

- Describe the classification, etiology and mechanisms of hypoxia.
- Explain the alterations of metabolism, and mechanisms of hypoxia.
- Describe the prevention and treatment of hypoxia.

Fever

- Describe the etiology and pathogenesis of fever.
- Describe the stages and manifestations of fever.
- Explain the metabolic and functional alterations in fever.
- Describe the definition and etiology of hyperthermia.

Shock

- Describe the classification and etiology of shock.
- Describe the features of several common types of shock.
- Explain the mechanisms of metabolic and functional alterations in shock.
- Describe the prevention and treatment of shock.

DIC (Disseminated intravascular coagulation)

- Describe the etiology, pathogenesis of DIC.
- Explain the mechanisms of metabolic and functional alterations of DIC.
- Describe the prevention and treatment of DIC.

Renal Failure

- Describe the etiology, pathogenesis and mechanism of acute renal failure.
- Explain the etiology, pathogenesis and mechanism of chronic renal failure.
- Describe the etiology, pathogenesis and mechanism of uremia.

Ischemia-Reperfusion Injury

- Describe the etiology and pathogenesis of ischemia-reperfusion injury.
- Explain the mechanisms of ischemia-reperfusion injury.
- Describe the prevention and treatment of ischemia-reperfusion injury.

Heart Failure

- Describe the etiology and pathogenesis of heart failure.
- Describe the compensatory responses of heart failure.
- Explain the clinical manifestations and treatment of heart failure.

Respiratory Failure

- Describe the etiology and pathogenesis of respiratory failure.
- Explain the mechanisms of respiratory failure.
- Describe the prevention and treatment of respiratory failure.

Tumor

- Describe the general concept of tumor.
- Describe the etiology and pathogenesis of tumor.
- Explain the prevention and treatment of tumor.

Brain dysfunction

- Describe the cell biology of the brain.
- Explain the basic knowledge of consciousness.
- Describe the etiology, pathogenesis of Parkinson's disease and Alzheimer's disease.

Instructional Methods:

The course comprises 40 hours of lectures. Two lecture sessions, one for 2 hours and one for 3 hours, will be held each week. Each session will be delivered to the entire class. A teaching assistant will act as liaison between students and teachers, and will be responsible for taking attendance, collecting quiz/exam papers and related matters.

Textbooks

Reference

1. Pathophysiology: The Biologic Basis for Disease in Adults and Children. Kathryn L. McCance, Sue E. Huether. 8th Edition. ISBN: 9780323583473
2. Pathophysiology. Lee-Ellen C. Copstead-Kirkhorn, Jacquelyn L. Banasik. 5th Edition. ISBN: 0323293174, 9780323293174

Evaluation:

Exams: There will be a final exam.....60%.

Quiz or homework.....30%.

Attendance.....10%