

## General Pathology

Course Code	Title of Course	Credit Hours
HND-217	General Pathology	3(2-1)

### Learning outcomes:

Students will be able to:

- Understand and explain the fundamental mechanisms of disease processes, including cellular injury, inflammation, hemodynamic disturbances, neoplasia, metabolic, and nutritional disorders.
- Apply laboratory techniques such as histopathological slide preparation, tissue processing, staining, and biochemical estimations to analyze pathological changes.
- Interpret clinical and laboratory findings by correlating structural and functional alterations with disease outcomes.
- Develop critical thinking skills to integrate theoretical knowledge and practical data for diagnosis, evaluation, and application in medical and allied health contexts.

### Course Contents:

#### Theory:

Introduction to General Pathology; The contents of General Pathology; Basic structure of a cell, function and its components; Cell regulatory mechanisms 1 and 2; Cellular adaptation, causes and pathogenesis of cell injury; Inflammation and its types, 3-step process of inflammation and repair, acute and chronic inflammation, 3-step process of inflammation and repair; Thermoregulation: mechanism, mechanism of fever and pain; Introduction to hemodynamic, hyperemia and congestion, type and effects of congestion, type of hemorrhages, emboli and its types, shock and its types; Basic genetic brush-up, classification of genetic disorders; Neoplasia and its terminologies, molecular basis of carcinogenesis, difference between benign and malignant tumor; Definition, classification, and diagnostic criteria of diabetes mellitus, glycemic index of foods, pathogenesis of diabetes mellitus (Type II- Diabetes), complications of diabetes mellitus, pathogenesis of diabetic nephropathy; Protein energy malnutrition, types and diagnosis of azotemia; Definition, etiology, and pathogenesis of gout, types and diagnosis of gout; Lipid disorders: abnormal fat deposition in liver; fatty liver, non- alcoholic steatosis, acute coronary syndromes (ACS), cardiac biomarkers, dietary oils, effect of diet on lipid profile and cardiac health; Vitamin D and coronary heart disease (CHD); Vitamin C and CHD; Hidden hunger; Types of anaemia, pathogenesis and outcomes; Diet and cancer; Water and food intoxication.

#### Practical:

Introduction to pathology laboratory: introduction to various instruments used in pathological laboratory, preparation of a histopathology slide, tissue processing-I, tissue processing-II, tissue processing-III, tissue processing-IV, stain and staining-I, special stains; Histopathological changes in cloudy swelling, fatty change and cellular degeneration; Histopathological changes of disturbances in growth, histopathological changes in acute and chronic inflammation; Optical techniques used in pathology laboratory; Total serum protein estimation and its interpretations; Polymerase chain reaction, gene sequencing; Serum albumin estimation and its interpretations; Serum urea and creatinine estimation and its interpretations; Blood glucose estimation; Point of care testing of glucose; Estimation of glycosylated hemoglobin; Hepatic enzyme estimation and its interpretations; Total bilirubin estimation and its interpretations; Albumin creatinine ratio in urine; Hb estimation in serum and interpretation; DLC for anaemia studies; Physical and chemical examination of urine; Total serum protein estimation and its interpretations; Urine analysis; Cholesterol estimation and its interpretations; Cardiac troponin estimation; BNP and Pro-BNP estimation; Awareness surveys about dietary oils, market surveys about dietary oils.

### **Suggested**

### **Readings Text**

#### **Books:**

1. A text book of Veterinary Systemic Pathology, J.L. Vegad Madhu Swamy, 2<sup>nd</sup> edition

#### **Reference Books:**

1. Kumar Cotran Robins, Basic Pathology, 6th Ed., W B Saunders Company, Philadelphia (1992)
2. Walters and Israel, General Pathology, Churchill Livingstone, London (1998).
3. Peter S Macfarlane, Robin Reid, Robin Collander, Pathology Illustrated, Churchill Livingstone, London (1998).
4. Walter G B, General Pathology, Churchill Livingstone, New York, 1996.