Template for Course Plan (Pathophysiology)

II. Course Description:

The course is designed to provide emergency medicine students' with knowledge related to mechanism of diseases concerning various body system. It will cover cellular physiology, alterations in cells, tissues injury, hypoperfusion, shock, self-defense mechanisms, variances in immunity, inflammation, stress, genetics and familial diseases.

IV. Course Contents:

A. Theoretical Aspect:

No.	Units/Topics List	Sub Topics List	Number of Weeks	Contact Hours
1	**Cellular Physiology: Basic Cellular Review**	▪ Intracellular and Extracellular Fluid ▪ Aging and the Distribution ▪ of Body Fluids ▪ Water Movement Between ▪ Intracellular Fluid and ▪ Extracellular Fluid o Osmosis o Diffusion o Fluid Replacement Therapy o Mediated Transport Mechanisms ▪ Water Movement Between Plasma and Interstitial Fluid o Anatomy of the Capillary Network o Capillary and Membrane Permeability ▪ Alterations in Water Movement o Pathophysiology of Edema	3	9

		○ Clinical Manifestations of Edema ▪ **Water Balance, Sodium, and Chloride** ○ Water Balance ○ Sodium and Chloride Balance ○ Alterations in Sodium, Chloride, and Water Balance ○ Dehydration ○ Electrolyte Imbalances ○ Overhydration ▪ **Acid–Base Balance** ○ Buffer Systems ○ Acid–Base Imbalance ○ Acidosis ○ Alkalosis ○ Mixed Acid–Base Disturbances		
2	**Alterations in Cells and Tissues Injury and Disease**	▪ **Cellular Adaptation** ▪ **Cellular Injury** ○ Hypoxic Injury ○ Free Radical Injury ○ Chemical Injury ○ Infectious Injury ○ Immunologic & Inflammatory Injury ○ Injurious Genetic Factors ○ Injurious Nutritional Imbalances ○ Injurious Physical Agents ▪ **Manifestations of Cellular Injury** ○ Cellular Manifestations ▪ **Cellular Death and Necrosis**	2	6
3	**Hypoperfusion and Shock**	▪ **Pathogenesis** ○ Decreased Cardiac Output ○ Compensatory Mechanisms ▪ **Types of Shock**	2	6

		▪ **Multiple Organ Dysfunction Syndrome** ○ Pathophysiology ▪ **Impairment of Cellular Metabolism**		
4		**Midterm exam**	1	3
5	**Self-Defense Mechanisms**	▪ **Inflammatory Response** ○ Stages of the Inflammatory Response ○ Mast Cells ○ Local and Systemic Response to Acute Inflammation ○ Responses to Chronic Inflammation ▪ **Immune Response** ○ Induction of the Immune Response ○ Blood Group Antigens ○ Rh Factor	2	6
6	**Variances in Immunity and Inflammation**	▪ **Hypersensitivity: Allergy, Autoimmunity, and Isoimmunity** ○ Mechanisms of Hypersensitivity ▪ **Immunity and Inflammation Deficiencies** ○ Primary Immune Deficiencies ○ Secondary Immune Deficiencies	2	6
7	**Stress and Disease**	▪ **Neuroendocrine Regulation of Stress** ○ Catecholamines ○ Cortisol ✓ Physiologic Effects of Cortisol ▪ **Role of the Immune System** ▪ **Interrelationship of Stress, Coping, and Illness**	1	3
8	**Genetics and Familial Diseases**	▪ **Factors Causing Disease** ○ Genetic Factors ○ Social &	2	6

		Environmental Factors ○ Age and Sex ▪ **Analyzing the Risk of Disease** ○ Disease Rates ○ Risk Factor Analysis ▪ **Combined Effects and Interaction of Risk Factors** ○ Familial Disease Tendency ○ Aging and Age-Related Disorders ▪ **Common Familial Diseases and Associated Risk Factors** ○ Common Familial Diseases and Associated Social and Environmental Risk Factors		
		Final exam	**1**	2
Number of Weeks /and Units Per Semester			**16**	**32**