1. Compare and contrast the physiology and pathophysiology of cellular function and structure.
   - Cell and Tissue Characteristics
   - Cellular Adaptation, Injury and Death
   - Stress and Adaption

2. Differentiate among the major mechanical, chemical, temporal, and spatial factors that influence basic cellular and tissue/organ functions.

3. Analyze the relationship between physiology and pathology within each of the following body systems:
   - Cardiovascular
     - Structure and Function of the CV system
     - Disorders of Blood Flow in the Systemic Circulation
     - Disorders of the Blood Pressure Regulation
     - Disorders of Cardiac Function
     - Disorders of Cardiac Conduction and Rhythm
   - Respiratory
   - Gastrointestinal
   - Hematologic
     - Blood cells and the Hematopoietic System
     - Disorders of Hemostasis
     - Disorders of Red Blood Cells
     - Disorders of White Blood Cells and Lymphoid Tissues
   - Endocrine
     - Mechanisms of Endocrine Control
     - Disorders of Endocrine Control of Growth and Metabolism
   - Musculoskeletal
   - Neurological
     - Organization and Control of Neural Function
     - Somatosensory Function, Pain and Headache
     - Disorders of Brain Function
   - Renal
     - Structure and Function of the Kidney
     - Disorders of Fluid and Electrolyte Balance
     - Disorders of Acid-Base Balance
     - Disorders of Renal Function
   - Integumentary
   - Sexual and reproductive

4. Discuss developmental physiology, etiology, pathogenesis, and clinical manifestations of common acute and chronic diseases.

Pharmacogenomics and PharmacolImmunology I (2 hrs)
Pharmacogenomics and PharmacolImmunology II (2 hrs)

1. Differentiate among genomics, proteomics, metabolomics and epigenetics that influence health.
2. Explain the basic principles of human genetics and heredity as they apply to inter-individual variation in treatment response.
3. Apply the principles of molecular and cellular biology to explain the genetic basis of variability in drug response.
4. Describe the various biochemical/molecular biology methods used to determine genotype and polymorphic variability.
5. Discuss how genetic variability in genes encoding drug metabolizing enzymes, drug transporting proteins, and drug receptors (targets) can contribute to variability in drug disposition and action, leading to changes in pharmacokinetics, pharmacodynamics and clinical outcome.
6. Recognize the societal and ethical implications of genetic testing and the resultant individualization of drug therapy.
7. Apply pharmacogenomic concepts to a particular drug therapy to solve relevant problems in pharmaceutical care.
8. Critically evaluate the current and future literature in the area of pharmacogenomics.
9. Identify key sources and reliable data-bases with pharmacogenomics knowledge base
10. Need to add Immunology specific objectives
   - Infection and Immunology
   - Immunology of HIV Infection
   - Immune Regulations and Tolerance
   - Autoimmunity
   - Transplantation
   - Immunoprophylaxis
   - Disorders of Immune Response
   - Immunology of Cancer

Content moved from Patho to Pharmacogenomics/PharmacolImmunology

- Genetic Control of Cell Function and Inheritance
- Genetic and Congenital Disorders
- Neoplasia
- Innate and Adaptive Immunity
- Inflammation and Tissue Repair
- Disorders of the Immune Response
- Infection
  - Mechanisms of Infectious Disease

Contact Moved from Patho to Modules

- Heart Failure and Circulatory Shock
- Diabetes Mellitus and the Metabolic Syndrome
- Wound Healing

Align MedChem/Pharmacology/Pharmacogenomics/Pharmaceutics content to be harmonized. Potentially Medical Physiology and Pathology can run separate without alignment with “drug” courses.