Pharmacology and Therapeutics: Overall Course Learning Outcomes and Objectives

At the end of the course the student will be able to:

MEDICAL KNOWLEDGE

1. Describe the basic scientific concepts and principles that serve as the foundational underpinnings of the pharmacological sciences including pharmacokinetics; pharmacodynamics; drug metabolism; and drug-drug interactions; and explain how these fundamental pharmacological properties can influence route of administration, drug action; drug efficacy and potency; drug levels in the body; potential for drug interactions; drug toxicity; and the appropriate choice of drug for pharmacotherapy in a given patient.

2. Explain how to use drug-specific and patient-specific pharmacokinetic parameters to calculate the physiochemical properties that influence rates of drug disposition and clearance in the body, and how these parameters can be used to monitor, design and modify appropriate dosing regimens of drugs in specific patient populations.

3. Describe the process by which new drugs are discovered, developed, tested and finally approved by the Federal Drug Administration for use in the clinic.

4. Discuss the fundamental principles of pharmacogenomics including how specific patient characteristics and genetics can affect the clinical response to particular classes of drugs, and how pharmacogenomics approaches can be used to influence the drug discovery process and the choice of drugs in the treatment of specific diseases.

5. List the major drugs and drug classes currently used in medical practice.

6. Describe the specific pharmacology of the major drugs and drug classes currently used in medical practice including their indications, contraindications, clinical use, mechanisms of action, physiological effects, pharmacokinetic properties, major adverse effects and clinically significant drug interactions; and apply this knowledge together with both disease-specific and patient-specific factors to select the most appropriate medication(s) for the effective pharmacotherapy of a given disease or condition in a specific patient.

7. Demonstrate an understanding of the molecular, cellular and physiological mechanisms underlying normal cell/organ function; the pathophysiological changes that occur in the etiology of the most common disease states, the
clinical presentations associated with these diseases and describe how targeting these mechanisms with the appropriate choice of drug(s) can act to effectively treat, cure, or mitigate the underlying disease causes and/or symptoms.

8. Discuss the overriding theoretical considerations and principles that underlie the successful pharmacotherapy of the major diseases and conditions including recognition and use of widely used, national organization-approved treatment algorithms.

9. Recognize the currently accepted diagnostic criteria required to specific diagnose disease and initiate drug therapy and the anticipated therapeutic goals likely to be achieved by therapeutic intervention for the most commonly encountered pathophysiologial state(s) and/or disease mechanism(s), as well as any clinical testing requirements for monitoring drug effectiveness and potential toxicity.

10. Explain the physiological, pharmacological, and psychological effects of acute and chronic exposure of individuals to drugs of abuse, and describe the consequences of sudden withdrawal of such a drug from a drug-dependent individual.

11. Describe the effective use of non-pharmacological therapeutic interventions in the treatment of specific diseases, conditions and symptoms.

12. Discuss the basic principles of toxicology; the mechanisms by which excess exposure to certain drugs, toxins, chemicals, heavy metals and poisons can lead to adverse toxicological effects; and the basic principles of clinically managing the poisoned patient.

13. Evaluate the relative pros and cons in the use of dietary supplements and herbal medications in the treatment of certain specific conditions, and compare and contrast the major differences in the laws and regulations governing the approval, safety, efficacy and marketing of these agents compared to conventional FDA-approved drugs.

INTERPERSONAL AND COMMUNICATION SKILLS

14. Demonstrate the ability to effectively communicate and work collaboratively together with peers in the small group setting to successfully address problems of pharmacological significance.

PROFESSIONALISM, MORAL REASONING, AND ETHICAL JUDGEMENT
15. Demonstrate professionalism by behaving in a professional and courteous manner when engaged in course activities or interacting with course faculty and staff, and by being punctual in attendance at required course activities such as small groups, team-based learning exercises and exams.