

International Trained-PharmD (ITPD) Foundational Examinations Study Guide

All applicants for the ITPD program are required to pass two foundational pharmacy sciences competency exams (one on biomedical sciences and one on pharmaceutical sciences) prior to admission into the ITPD program. These foundational competencies exams will cover the following learning objectives.

BASIC BIOMEDICAL SCIENCES
Anatomy & Physiology
structure and function of Major body systems: integumentary, muscular skeletal, cardiovascular, lymphatic, respiratory, digestive, nervous, endocrine, urinary, reproductive, and body fluid and electrolytes
molecular aspects of cell biology
cell physiology and cellular structure and organization
Pathology/pathophysiology
basic principles and mechanisms of disease including: inflammation & repair, degeneration, disturbances on hemodynamics, developmental defects, neoplasia
pathophysiology of disease states amenable to pharmacist intervention
Microbiology
pathogenic micro-organisms of man
Immunology
human immunity and immune response
principles of antigen-antibody relationships
molecular biology of immune response
genetic basis for antibody synthesis, development, function, and immunopathology
Biochemistry/biotechnology
chemistry of biomacromolecules (proteins, lipids, carbohydrates, and DNA)
enzymology and co-enzymes and kinetics
metabolic pathways to energy utilization
nucleic acid metabolism, including DNA replication and repair, RNA, and protein synthesis
recombinant DNA technology
Molecular biology/genetics
cell structure and components
ion channels and receptor physiology
mitosis and meiosis
chromosomes and DNA
gene transcription and translation processes
recombinant DNA technology

PHARMACEUTICAL SCIENCES

Medicinal chemistry

physico-chemical properties of drug molecules in relation to drug absorption, distribution, metabolism, & excretion

chemical basis of pharmacology and therapeutics

fundamental pharmacophores for drugs used to treat disease

structure activity relationships in relation to drug-target interactions

chemical pathways of drug metabolism

application to making drug therapy decisions

Pharmacology

mechanism of action of drugs in various categories

role of pharmacology in drug choice and the treatment of disease

pharmacodynamics of drug action and absorption, distribution, metabolism, and elimination

adverse effects and side effects of drugs

drug-target interactions

drug-drug, drug-food, drug-lab test interactions

drug discovery and development

Pharmacognosy & alternative & complementary med.

concepts of crude drugs, semi-purified, and purified natural products

variability of occurrence of pharmacologically active substances in plants & impact on regulatory aspects of herbal products

Toxicology

mechanism of toxicity and toxicokinetics

acute and chronic toxic effect of xenobiotics on the body, including drug or chemical overdose and toxic signs of drugs of abuse

antidotes and approaches to toxic exposures

Pharmaceutics/biopharmaceutics

physical-chemical principles of dosage forms

biological principles of dosage forms

principles of drug delivery via dosage forms (e.g., liquid, solid, semi-solid, controlled release, patches, & implants)

principles of dosage form stability and drug degradation in dosage forms

materials and methods used in preparation and use of dosage forms

Pharmacokinetics/clinical pharmacokinetics

basic principles of in vivo drug kinetics (linear and nonlinear)

principles of bioavailability/bioequivalence

physiologic determinates of drug onset and duration

drug, disease, and dietary influences on absorption, distribution, metabolism, and excretion

clinical pharmacokinetics of commonly used and low-therapeutic-index drugs

the pharmacokinetic-pharmacodynamic interface

Extemporaneous compounding/parenteral/enteral

United States Pharmacopeia guidance on compounding and FDA Compliance Policy Guidelines

techniques and principles used to prepare and dispense individual extemporaneous prescriptions, including dating of compounded dosage forms

liquid (parenteral, enteral), solid, semi-solid, and topical preparations

dosage form preparation calculations

sterile admixture techniques: United States Pharmacopeia (USP) Chapter 797, stability and sterility testing and dating, clean room requirements, infusion devices and catheters