

TOPICS FOR THE SPECIFIC KNOWLEDGE EXAM OF THE POSTGRADUATE PROGRAM IN PHARMACEUTICAL SCIENCES FOR NEW STUDENTS

Course: Master, Doctorate and Direct Doctorate

Concentration Area: Natural and Synthetic Products

Biochemistry:

Structures and functions of biomolecules: proteins, carbohydrates, lipids, and nucleic acids

Techniques for macromolecule separation

Preparation of solutions and buffers

Analytical curves

Pharmacology:

Fundamentals of pharmacokinetics and pharmacodynamics

Pharmacognosy:

Major classes of natural products from plant origin (essential oils, flavonoids, steroids, alkaloids): extraction, characterization, and analysis

General Chemistry and Analytical Chemistry:

Acid-base equilibrium: physiological and analytical aspects

Chromatographic methods

Basic aspects of coordination compound chemistry

Organic Chemistry:

Organic functions

Stereochemistry of organic compounds

Stability and reactivity of reaction intermediates

Absorption spectroscopy in the ultraviolet/visible and infrared regions

Pharmaceutical Chemistry:

Structural factors influencing molecular drug-receptor recognition and drug action: stereochemistry of organic substances, electronic effects through bonds, physicochemical properties (pKa, partition coefficient), drug-receptor interaction forces

Major chemical reactions involved in drug metabolism

Bioisosterism and prodrug concepts

Therapeutic Classes: Non-steroidal anti-inflammatory drugs; antibiotics; central nervous system drugs; autonomic nervous system drugs.

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- C.M.O. SIMÕES; E.P. SCHENKEL; G. GOSMANN; J.C.P. MELLO; L.A. MENTZ; P.R. PETROVICK, **Farmacognosia da planta ao medicamento**. Editora da UFSC, 821p., 2ª Edição, 2000.
- L. JONES; P. ATKINS, **Chemistry - Molecules, Matter and Change**, W. H. Freeman, 4th Edition, 2000.
- C. H. COLLINS; G. L. BRAGA; P. S. BONATO, **Fundamentos de Cromatografia**, Editora da Unicamp, Campinas, 2006.
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