BAREILLY INTERNATIONAL UNIVERSITY

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Course Work - Ph. D.

Syllabus – Faculty of Medicine

Paper-II (100 Marks)

Pharmacology (Code – 91156)

Credits : 04
Hrs. : 60

UNIT-I

General Pharmacology…

- Important landmarks in the growth and development of Pharmacology, important contributions of renowned Indian and foreign Pharmacologists
- Definitions, sources, Classification and nomenclature of drugs
- Principles and modes of drug administration
- Pharmacokinetics
- Pharmacodynamics
- Drugs interactions (Food, Disease and drugs)
- Adverse drug reactions
- Methods of new drug development
- Factors modifying drug response
- Pharmacogenetics and pharmacogenomics
- Structure-activity relationship of important group of drugs
- Preclinical evaluation of new drugs and toxicity studies
- Dose-response relationship, drug efficacy & potency, therapeutic index, LD 50 & ED 50, synergism, drug antagonism, factors modifying drug action, adverse drug reactions, drug interactions.
- Phases of drug development, generic name, trade name, fixed dose combinations, p Drugs, Essential drugs, Evidence based Medicine, Pharmacovigilance, Pharmacoeconomics and Drug Information.
- Rational drug therapy.
- History of Pharmacology
- Orphan Drugs, Disease & receptor
- Placebo/Nocebo
- Sources and dosage form of drugs
- Routes of Drugs Administration
- Membrane Transporters
- Xenobiotics
- Biotransformation of drugs
- Drug-Drug Interactions
- Dose response curve
- Signal transduction mechanisms
- Combined effect of drugs
- ADR Monitoring
- Pharmacoepidemiology
- Pharmacoeconomics
- Pharmacogenetics & pharmacogenomics
- Spurious Drugs
- Prebiotics & Probiotics
- Clinical Trials

- Drugs and Cosmetic Act, Drug Price Control order, Application for Investigational New Drug (IND), Application for New Drug Discovery (NDD) according to Indian Control Authority & USFDA guidelines.
- Ethical considerations in utilizing human subjects for drug discovery
- Methods involved in the development of new drugs
- Preclinical toxicological studies. Calculation of LD50 & ED50. Acute, subacute and chronic toxicity studies.
- Pre-clinical pharmacokinetic and pharmacodynamics studies. Use of High throughput screening.
- Parametric and non parametric tests
- Correlation and regression
- Use of appropriate statistical techniques to analyze the results
- Use of SPSS
- Therapeutic drug monitoring
- ANOVA
- Post hoc analysis
- Probit analysis
- New Drug Delivery Techniques
- Chronopharmacology
- Serendipity
- Sampling

UNIT-II

Systemic Pharmacology…

- General considerations and Neurohumoural transmission
- Cholinergic drugs
- Anticholinergic drugs
- Neuromuscular blockers and ganglion blockers
- Adrenergic drugs
- Antiadrenergic drugs
- Renal physiology
- Diuretics
- Antidiuretics
- Pharmacotherapy of Bronchial asthma and status asthmaticus
- Pharmacotherapy of cough
- Normal physiology of heart
- Pharmacotherapy of heart failure
- Pharmacotherapy of arrythmia
- Pharmacotherapy of Hypertension
- Treatment of shock and peripheral vascular disease
- General consideration and neurotransmission in CNS
- Pharmacotherapy of Parkinson's disease and Neurodegenerative disorder
- Pharmacotherapy of Epilepsy
- Pharmacotherapy of Psychosis and Mania
- Pharmacotherapy of Depression and anxiety
- Opioid analgesics
- Sedative- Hypnotics
- General anaesthetics
- Local anaesthetics
- Drug abuse and drug dependence
- CNS stimulants, Analeptics and cognitive enhancers
- Anterior Pitutary Hormones
- Insulin ,Oral anti-Diabetics & Glucagon
- Thyroid hormones & thyroid inhibitors
- Corticosteroids
- Estrogens,Progestins & Contraceptives
- Androgens & drugs for erectile dysfunction

- Oxytocin & other drugs affecting the uterus
- Drugs affecting calcium balance
- Drugs for Peptic Ulcer & GERD
- Antiemetics, Prokinetics & Digestant drugs
- Drugs for constipation & Diarrhea
- Haematinics
- Coagulants, Anticoagulants
- Antiplatelet drugs
- Fibrinolytics and antifibrinolytics
- Drugs for dyslipidaemia
- Histamine and antihistamines
- Ergot alkaloids,5-Hydroxytryptamine and its agonist and antagonist
- Prostaglandins, Leukotrienes, Plasma Kinins, Angiotensin
- Non steroidal anti-inflammatory drugs
- Drug therapy of Rheumatoid Arthritis, Gout, and other types of arthritis
- Mechanism of Antimicrobial Resistance
- Sulfonamides, Cotrimoxazole, and Quinolones
- Penicillins and other Beta lactama Antibiotics
- Tetracycline& Chloramphenicol (Broad Spectrum Antibiotics)
- Aminoglycoside antibiotics
- Macrolides, lincosamides, glycopeptides antibiotics
- Anti-Tubercular
- Anti-Leprotic
- Anti-Fungal
- Anti-Malarial
- Anti-Viral & Anti- retroviral
- Anti-Amoebic & Anti- protozoal
- Anthelminthic
- Anti-Cancer
- Antimicrobial stewardship program

UNIT-III

Clinical Pharmacology & Pharmacotherapeutics…

- Clinical drug evaluation
- Clinical trial designing and ethics
- Pharmacovigilance
- Causality assessment
- ADR assessment scales
- Drug and cosmetic act
- Pharmacoepidemiology, Pharmacoeconomics
- Drug schedules
- Log dose response curve
- Setting of IV drip
- Posology
- Estimation of glucose and protein in plasma
- Evidence based Medicine
- Features of common Laboratory animals
- Study design
- Biostatistics
- Immunoassays

- Toxicity Studies
- Plant extraction methods
- Molecular cell biology
- Cell line studies
- CPCSEA
- Handling of common laboratory animals
- Institutional Animal Ethical Committee
- Elementary principles of common technical techniques such as colorimeter, spectrophotometer etc.
- Various instruments, anaesthetics and physiological salt solutions used in animal experiments.
- Reverse Pharmacology
- Biomedical Waste Disposal
- Bracketing assay
- Matching assay
- HPLC
- Spectrophotometer
- Promotional Product Literature
- Impact Factor
- Computational Pharmacology
- New uses of old drugs
- Biosimilars
- Acute & Chronic Toxicity studies
- Nanotechnology
- Good clinical practices
- Good laboratory practices
- Euthanasia
- In-silico tests

UNIT-IV

Screening for Pharmacological activity/ Drug evaluation

- Analgesic-Antipyretic
- Anti-inflammatory
- Anticonvulsant
- Sedative-hypnotics
- Anti-psychotic
- Anti-depressant
- Anti-diabetic
- Anti-parkinsonian
- Anti-anginal
- Anti-arrhythmic
- Anti-Hypertensive
- Anti-Diuretic
- Hypoglycaemic
- Anti-secretory
- Anti-fertility
- Anti-cance