NIRMA UNIVERSITY

INSTITUTE OF PHARMACY

Syllabus for PhD. Entrance Examination 2023-24

(Pharmaceutical Analysis)

- Spectroscopy: UV-Visible spectroscopy, IR spectroscopy, Spectroflourimetry, Flame emission spectroscopy and Atomic absorption spectroscopy, NMR spectroscopy, Mass Spectroscopy. Interpretation of the NMR, Mass and IR spectra of various organic compounds.
- Chromatography: Thin Layer chromatography, High Performance Thin Layer Chromatography, Ion exchange chromatography, Column chromatography, Gas chromatography, High Performance Liquid chromatography, Ultra High Performance Liquid chromatography, Affinity chromatography, Gel Chromatography, Super critical fluid chromatography. Hyphenated techniques like HPLC-MS, GC-MS.
- Electrophoresis techniques, X-Ray Crystallography, Thermal Techniques like DTA, TGA and DSC, Immunoassays (IA).
- Impurity and stability studies, Impurities in new drug products, Impurities in residual solvents, Elemental impurities, Stability testing protocols, Impurity profiling and degradant characterization,
- Calibration and qualification of analytical instruments, Analytical method validation for dissolution, assay etc.
- Extraction of drugs and metabolites from biological matrices, Bioanalytical method validation, Biopharmaceutics Classification System, Pharmacokinetics and Toxicokinetics, Metabolite identification, In Vivo: Bioavailability and Biocquivalence. Analysis of bio therapeutics and biological products including peptide mapping, n-terminal sequencing, post translational modification, disulfide bond characterization
- Analysis of raw materials, finished products, packaging materials, in process quality control (IPQC), Developing specification (ICH Q6 and Q3), Documentation in pharmaceutical industry, Manufacturing operations and controls.
- Herbal drug standardization, Adulteration and Deterioration: Determination of Foreign Matter, DNA Finger printing techniques in identification of drugs of natural origin, heavy metals, pesticide residues, phototoxin and microbial contamination in herbal formulations, Stability testing of natural products, protocol, Evaluation of cosmetic products.