BAREILLY INTERNATIONAL UNIVERSITY

Pilibhit Bypass Road, Bareilly - 243006 (U.P) India
Phone: 0581-2526051, 053, 153
Email: info@biu.edu.in Website : www.biu.edu.in

Course Work - Ph. D.

Syllabus – Faculty of Pharmacy

Paper-II (100 Marks)

Advances in Pharmaceutical Sciences (Code – 91216)

Credits : 04
Hrs. : 60

Unit I: Spectroscopy

- a) UV- Visible spectroscopy: Introduction, theory, laws, instrumentation associated with UV-Visible spectroscopy. Choice of solvents and solvent effect, Applications of UV visible spectroscopy.
- b) IR Spectroscopy: Theory, modes of molecular vibrations, sample handling. Instrumentation of dispersive and Fourier-Transform IR spectrometer, Applications of IR spectroscopy.

Unit II: Spectroscopy

- a) NMR Spectroscopy: Principle, instrumentation, solvent requirement in NMR, relaxation process, NMR signals in various compounds. Chemical shift, factors influencing chemical shift, spin-spin coupling, coupling constant, nuclear magnetic double resonance.
- b) Mass Spectroscopy: Principle, theory, instrumentation of mass spectroscopy. Different types of ionization like electron impact, chemical, field, FAB and MALDI, APPI, Mass Fragmentation and its rules. Applications of mass spectroscopy.

Unit III: Chromatography

Principle, apparatus, instrumentation, chromatographic parameters, factors affecting resolution and application of the following:

- a) Thin layer chromatography
- b) Gas chromatography
- c) High performance liquid chromatography

Unit IV: Stages of drug discovery

- Drugs laws, FDA, ICH, IND, Drug relation with pharmacodynamics and pharmacokinetics, Design of preclinical studies and clinical development, clinical risk/benefit analysis, Good laboratory practice (GLP), new drug application (NDA) and Abbreviated New Drug Application (ANDA).

Unit V: Extraction and evaluation of drugs

- Different techniques adopted for the extraction of phytoconstituents like Maceration, percolation, sonication, soxhlet assisted extraction, ultrasound assisted extraction,super critical carbon dioxide extraction, Microwave assisted extraction, Morphological screening by scanning electron Microscopy (SEM) and Transmission electron Microscopy (TEM).