M.D. Biochemistry Syllabus

PAPER I
General and Clinical Biochemistry


Quality control and automation in clinical biochemistry. Analysis of analytes in blood, urine and cerebrospinal fluid. Metabolic and respiratory acidosis and alkalosis.


PAPER II
Intermediary Metabolism and Bioenergetics


Metabolism of Ca, Pi, and trace elements (Se, Zn, Cu, Fe). Role of Na, K, and Cl in homeostasis and related disorders. Regulation of acid-base balance.


Role of hormones in the regulation of metabolism and mechanism of their action. Consequences of hormone dysfunction. Eicosanoids.

PAPER III
Immunology and Molecular Biology


**PAPER IV**

Biochemical and Molecular Biology Techniques


**Ph.D. Course Work Syllabus of Biochemistry**

**Paper-I (Theory)**

**Unit-I: General Biochemistry:**


**Unit-II: Biochemical and Immunological Techniques:**

Principles and applications of- Spectroscopic methods (UV-visible, Fluorescence, Circular dichrosim, and mass spectrometry), Electrophoresis, Centrifugation, Chromatography, Immunodiffusion, RIA and ELISA. Knowledge of Electron microscopic techniques, NMR, MALDI/TOF, X-ray diffraction. Restriction mapping of DNA fragments and Enzyme engineering. Immunofluorescence and Hybridoma technology.

**Unit III: Research Methodology, Quantitative Methods, Computer Applications Biostatistics and Bioinformatics:**

Meaning of research, Objectives of research, Selection of research problem, Development of working hypotheses and its testing, Literature survey, Experimental design, Validation of methods, Processing and analysis of data, Interpretation of data and conclusion, Ethical rules
for research. Applications of Internet explorer, Search engines, Reference manager/End note and Microsoft office. Computational analysis of data, Students ‘t’ test, Chi-square test, ANOVA, HBSS, Multiple range tests, Standard deviation.

**Unit-IV: Clinical Applications of Biochemistry**

Therapeutic uses of enzymes, Diagnostic significance of serum enzymes and isozymes, DNA Vaccines, Nanomedicine Technology, Mode of action of anti-HIV drugs, Various modes of Cancer therapy, Stem cell therapy.

Biochemistry Paper-II is prepared by the concerned supervisor of the student and passed in the meeting of the Board of Studies.