

**Department of Biochemistry
Faculty of Life Sciences
A.M.U. Aligarh.**

Ph.D. Syllabus
Passed in BOS on 28.11.2013

Ph.D. Biochemistry Syllabus

Paper-I

Biotechniques and Research Methodology

Unit-I

Molecular Biology: A general idea of recombinant DNA techniques, agarose gel electrophoresis, DNA and RNA gels, restriction enzyme digestion, concept of restriction enzymes buffer and concentration. PCR, reverse transcriptase-PCR, Southern, western and northern blotting, DNA sequencing.

Unit-II

Protein Biochemistry: Spectroscopic methods, Fluorescence, red shift, blue shift, circular dichroism, FTIR and mass spectrometry. PAGE, SDS-PAGE, ammonium sulphate precipitation and dialysis. Gel, affinity and ion exchange chromatography. ELISA, Immune fusion RIA, CML and MLR.

Unit-III

Solutions and Biostatistics: Mole concept, buffer and other solution preparations, dilution of solutions, concept of w/w, w/v and v/v in solution. Measures of central tendency, standard deviation, dispersion and variability. Correlation coefficient, probability theory. ANOVA one way and two way classification. Significance of p-value.

Unit-IV

Centrifugation and Microscopy: Relationship between 'g' and RPM in centrifugation. Ultracentrifugation, sedimentation velocity, sedimentation coefficient, sub-cellular fractionation. Electron microscopic techniques, SEM, TEM freeze fracture techniques.

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Ph.D. Syllabus
Passed in BOS on 21.03.2011
(to be introduced w.e.f. 2011-2012)
Passed in the CASR its meeting held on 28.04.2011

Ph.D. Biochemistry Syllabus

Paper-II

(A course designed for each candidate related to his /her area of research)

As per the academic ordinances relating to the Ph.D. course work, paper-II shall comprise of content of the topic of his / her research. The following shall be the course contents of this paper. The examination of this paper shall be conducted by a committee comprising Chairman, Supervisor and one senior teacher of the Department.

1. The candidate shall be required to write a critical review on his/her assigned subject of research – 50 marks
2. The candidate shall present the above review before the committee – 25 marks
3. The committee shall also conduct a viva-voce examination on the review written by the candidate as well as areas related to his /her research- 25 marks.