MANIPAL UNIVERSITY JAIPUR

School of Basic Sciences

Department of Biosciences
Course Hand-out

Biotechnology Lab - I| BT 2136 | 2 Credits

Session: Jul- Nov 2018 | Faculty: Dr. Mousumi Debnath

Course Outcomes: At the end of the course, students will be able to

BT2136. 1 Understanding about the various laboratory instruments and their principle

BT2136. 2 Acquire skills and Knowledge about DNA isolation, quantification from living cells

BT2136. 3 Learn different techniques for molecular biology studies such as Electrophoresis, Southern blotting and Northern blotting

BT2136. 4 Analyse the various stages of cell division (mitosis and meiosis) and signal transduction and develop skills for preparation of microscopic slides and identify the correct stage in cell cycle

BT2136. 5 Understand and learn the basic statistical software and their applications in the field of molecular biology to develop skills and enhance employability

A.   SYLLABUS

Introduction of various laboratory instruments. Identification of different cells, Preparation of mitotic and meiotic chromosomes. Sectioning of plant tissues. Morphological study of microorganisms by differential staining techniques. Study of structure of cell organelles through electron micrographs. Isolation of genomic DNA from bacteria and plants. Southern blotting. Isolation of plasmid DNA. Isolation of RNA. Northern blotting. *In vitro* transcription and translation. Quantification of DNA.

B.   TEXT BOOKS

i. K.V. Chaitanya. *Cell and Molecular Biology: A Lab Manual*, PHI Publisher, India, 2013.

ii. T.A. Brown. Genomes, Garland Science, New York, 2006.

iii. J. Sambrook, E.F. Fritsch, T. Maniatis. Molecular Cloning: A Laboratory Manual. Cold Spring Harbor Laboratory, New York, 1989.

iv. M.S. Clark. Plant Molecular Biology - A Laboratory Manual, Springer, USA, 2014.

v. H.P. Puttaraju. *Molecular Biology & Biochemistry: A Lab Manual with Colour Plates (Manual Series-I)*. New India Publishing Agency, New Delhi, 2008.