



Shiksha Mandal's
Bajaj College of Science, Wardha
Department of Biotechnology
**Certificate Course in
Fundamentals of Molecular Biology**

Specification of the course -

A) Nature	Certificate course
B) Duration/ Credits	30 Hrs/ 2 Credits
C) Number of seats	20
D) Fee proposed	Rs. 500/-

I COURSE OVERVIEW:

Certificate Course in Fundamentals of Molecular Biology designed for students wants to pursue knowledge of molecular biology and techniques used in biotechnology and genetic engineering. The important feature of the fundamentals of molecular biology certificate program is to focus on principle of fundamental laboratory methodologies used in molecular biology and advance techniques used in genetic engineering.

II. ELIGIBILITY: UG/ PG (Pursuing)

III. COURSE OBJECTIVE:

1. To study the principle of fundamental laboratory methodologies used in molecular biology
2. To study the principles of basics of advance technique used in genetics engineering.

IV. EXPECTED COURSE OUTCOMES:

1. Students will be able to discuss various techniques used in molecular biology
2. Students will be able to apply their knowledge in advance experiments.

U.A. Malode
02/04/2024

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SYLLABUS

- 1) Scope of molecular biology
- 2) Isolation of DNA from animal tissue (liver or Blood) plant tissue and microbial cells.
- 3) Agarose Gel electrophoresis, Types of electrophoresis, Types of Buffer, gel loading dye and preparation of other chemicals
- 4) Restriction Enzyme: various types, their properties, nomenclature Restriction digestion, Principle of RFLP and DNA Fingerprinting.
- 5) DNA Ligation, application of DNA ligase enzyme.
- 6) Concept of Genetic engineering, mechanisms of gene transformation, Screening of recombinant Colony.
- 7) DNA markers: Polymerase Chain Reaction, Types and generation of Thermocycler
- 8) PCR Primer designing, characteristic of ideal primers.
- 9) Plasmid, Types of plasmids.
- 10) Introduction to Southern blotting of DNA Sample.
- 11) Protein isolation, SDS PAGE electrophoresis.

References:

1. Sambrook, J and Russell, D.W. (2001) Molecular Cloning: A Laboratory Manual. Cold Spring Harbor, N.Y.: Cold Spring Harbor Laboratory.
2. Sambrook, J., Fritsch, E. F., & Maniatis, T. (1989). Molecular cloning: A laboratory manual. (2nd ed.). Cold Spring Harbor Laboratory Press.
3. Biophysical Chemistry, 4th edition, (2016), Upadhyay A., Upadhyay K. and Nath N., Himalaya publication house.
4. Brown, TA (1995) Essential Molecular Biology. Vol. I, A Practical Approach. IRL Press, Oxford, UK.
5. Alberts, B., Johnson, A., Lewis, J., Raff, M., Roberts, K., & Walter, P. (2002). Molecular biology of the cell (4th ed.). Garland Science.
6. Dieffenbach, C.W., & Dveksler, G.S. (2003). PCR (The Basics). Cold Spring Harbor Laboratory Press.

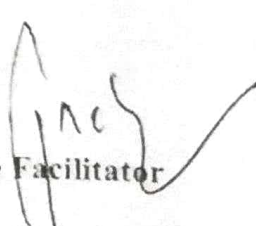
Co-Course Co-ordinator

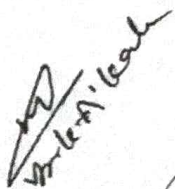

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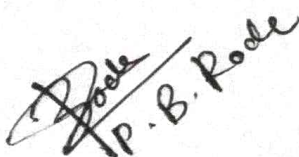


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Prof. P.V. Tekade
Principal
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P. B. Poole