

**Vivekanand College, Kolhapur**  
**(Empowered Autonomous Institute)**  
**Department of Biotechnology**

**Syllabus for M.Sc. Biotechnology Entrance**

**Eligibility: B.Sc. in Biotechnology, Biochemistry, Microbiology, Botany & Zoology)**

1. **Techniques:** Principles and applications of chromatography, spectroscopy, microscopy, electrophoresis, centrifugation, blotting, PCR & radioisotope techniques
2. **Chromatin structure and function:** Organization of chromosomes in prokaryotes and eukaryotes, chromatin types, centromere, Telomere and concept of gene
3. **Biochemistry:** Structure and functions of proteins, DNA, carbohydrates, lipids & vitamins. Bioenergetics, Glycolysis, TCA cycle, Electron Transport System and ATP synthesis, oxidation and synthesis of fatty acid, membrane structure and function
4. **Biotechnology:** Recombinant DNA technology, principles of gene cloning, applications of biotechnology in medicine, industry and agriculture, animal & plant cell culture, environmental biotechnology
5. **Microbiology:** Diversity of microbes, bacterial reproduction, antimicrobial agents, significance of microbes in the industry and agriculture, antigen, antibody, complement systems, immunity, vaccines, plant virus, animal virus and environmental microbiology.
6. **Molecular Genetics:** Principles of inheritance, linkage & crossing over, chromosomal aberrations, extrachromosomal inheritance, replication, transcription, translation, DNA repair and population genetics
7. **Plant Sciences:** Bryophytes, Pteridophytes, Gymnosperms, Angiosperms, Vascular system in plants, Economic important of plants, Photosynthesis, Photoperiodism, Vernalization, and Biogeochemical cycle
8. **Animal Sciences:** Characteristics of invertebrates and vertebrates, anatomy and physiology of different system of humans, nerve impulse transmission, endocrinology, human diseases Apoptosis and cancer, inherited diseases, animal cell culture.