

**GOVT. DIGVIJAY AUTONOMOUS P.G. COLLEGE,
RAJNANDGAON (C.G.)**



DEPARTMENT OF BIOTECHNOLOGY

**PROGRAMME OUTCOMES AND COURSE OUTCOMES
2023-24**

Department of Biotechnology

Govt. Digvijay Autonomous PG College Rajnandgaon (C.G.)

B.Sc. and FYUG (NEP 2020) Programme

Programme Outcome

Upon completion of the FYUG (NEP 2020) Programme the graduate will be have –

- A scientific mindset,
- open-mindedness,
- theoretical and practical understanding of science
- Better communication
- Conscious, accountable, and capable of making decisions
- Utilizing knowledge in organizations, businesses, jobs, and society

Programme Specific Outcomes

B.Sc. and FYUG (NEP 2020) (Biotechnology as one optional subject)

Upon completion of these courses the student would –

- Capable of comprehending both the theoretical and practical elements of environmental sciences, genetics, biochemistry, molecular biology, cell biology, and bioprocessing.
- To gain a basic understanding of bioinformatics
- Capable of comprehending bioanalytical instruments and laboratory regulations
- Compile ideas for use in the fields of tissue culture, water treatment, blood banks, dairy, food, and diagnostics, among others.
- Capable of comprehending how bioproducts, such as proteins, alcohols, enzymes, acids, vaccines, antibodies, and antibiotics, are used in society.

Course Outcome

FYUG SEM I

DSC : Biochemistry and Metabolism

- Students will be able to demonstrate their grasp of basic biochemical concepts, such as the structure and function of biomolecules, metabolic pathways, and the regulation of biological and biochemical pathways, upon completion of this course.
- Students will become proficient in fundamental laboratory procedures related to biochemistry, including the analysis of lipid, protein, and carbohydrate enzymes.

FYUG SEM II

DSC: Cell biology

- Recognise the fundamentals of cell structure and the roles played by different cell organelles.
- Acquire practical understanding regarding cell division.
- The student will gain a basic understanding of cancer and extracellular matrix.

FYUG SEM III

DSC: General Microbiology

After the present course student will be able to -

- describe fundamentals about microbes.
- gain understanding of microbial nutrition.
- read and analyse about the microbial growth.
- understand the concept of control of microbes.

FYUG SEM IV: Molecular Biology

After the present course student will be able to –

- describe basics of DNA
- gain understanding of DNA damage and repair

- read and analyse about the transcription
- understand the concept of translation

B.Sc. III

Paper I: General Biotechnology: Plant, Environment and Industrial Biotechnology

- By the end of course student should be able to explain the various components of PTC media, technique of sterilization, rooting and shooting, Micropropagation. They can able to know application of PTC in production of Bt plants, disease free plants, GMOs etc.
- Student will able to understand microbial growth and production of desire product by fermentation using fermenter, types of fermenter and its components. They can also know by completing of this paper about environmental pollution, its reason, major pollutants and biotechnological control. Understanding about the food technology and its preservation can also achieve by teaching this course.

Paper II: Immunology, Animal and Medical Biotechnology

- By the end of course students are able to explain cells and organs of immune system, structure and characteristics of antigen and antibody. Mechanism of immunity and defense against various foreign bodies.
- Various techniques such as ELISA, RIA, Precipitation, agglutination, immunoelectrophoresis are also very important areas of study in the course.

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M.Sc. Programme

Programme Outcome

Upon completion of the Post Graduate the student would have -

- Scientific temperament
- Leadership
- Visionary aptitude
- Ethical knowledge
- Employment ability
- Communication skill

Programme Specific Outcomes

Upon completion of these courses the student would –

Effective writing, communication and presentation

Command in language and analytical tools of biochemistry, molecular biology, immunology, microbiology, plant biotechnology, bioprocessing etc.

Perform statistical and computer oriented biological practices of bioinformatics.

Digital teaching and learning

Able to perform industrial oriented practicals like fermentation, waste water treatment, water quality analysis, plant tissue culture, microbial diagnosis, biochemistry test, food processing and preservation etc.

Course Outcome

Paper 1: Cell Biology

This course is designed to enable students to acquire knowledge on the structure, behaviour and functioning of cell constituents and outer cover. Cellular transport and division is added to understand the concept.

Paper 2: Genetics

By the end of course students are able to understand students to acquire knowledge on mendelian inheritance, mutation, chromosomal change and genetic system of some organisms.

Paper 3: Microbial Physiology and Biosafety

Upon completion of these courses the student would acquire knowledge on the microbial classification, structure, metabolism, reproduction and disease caused by pathogens. Biosafety, a new aspect is also included.

Paper 4: Bio-molecule

This course is design to gather knowledge on classification, structure and properties of biomolecules. Biochemical pathways based on the molecules are also included in the paper.

Paper 5: Biostatistics & Computer Application in Biotechnology

This course is centered to the basic knowledge on biostatistical analysis of data, tabular and graphical presentation and computer applications.

Paper 6: Molecular Biology

Upon completion of these courses the student would know the depths of central dogma, diagnosis of DNA, molecular mapping and genome analysis.

Paper 7: Plant Biotechnology

This course is focused to provide knowledge on principle of plant tissue culture, different techniques and its applications.

Paper 8: Macromolecules and Enzymology

By the end of course students are able to know about the role of macromolecules and enzymes in biological system.

Paper 9: Genetic Engineering

Upon completion of these courses the student would know about the principle and process and genetic engineering. The paper also contains applications of genetic engineering in different areas.

Paper 10: Biology of immune system

This course is design to understand immune cells and its work, antigen antibody reactions, immunity against diseased etc.

Paper 11: Bioprocess Engineering & Bio-entrepreneurship

Upon completion of these courses the student would get knowledge on principle of bioprocess engineering. It includes the media, potential microbes and bioreactors for production of metabolites. Downstream processing and ideology of production of some important products is also included in the paper. Opportunity of bio-entrepreneurship is also included in the course.

Paper 12: Environmental Biotechnology

By the end of course students are able to provide knowledge on environmental pollution and its control. The paper meets global environmental issues and its adverse effects.

Paper 13: Basic Concept of Bioinformatics and Nanobiotechnology

This course is focused with the biological data, its centre sources and application in different areas. The paper also aims to provide information about Nanobiotechnology.

Paper 14: Advanced techniques and Research Methodology

This course aims to provide information about advance tools and technique useful to perfume different biotechnological experiments. The

Paper 15: Animal Biotechnology

This course is design to provide knowledge on basic principles of animal tissue culture and its broad applications.

Paper 16: Functional Genomics & Proteomics

Upon completion of these courses the student would get knowledge on genome mapping, sequencing and comparative analysis of genome of different organisms. The paper also includes advance tools techniques for analysis proteins.