VIDYABHARTI SANSTHA, WARDHA.
DR. R. G. BHOYAR ARTS, COMMERCE & SCIENCE COLLEGE
MOHANAPUR, TH-SELOO DIST-WARDHA 442104
(FORMERLY VIDYABHARTI COLLEGE)
Affiliated To Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur.
NAAC Accredited with B+ Grade
College Index : (Sr.-699) (Jr.07.08.006)

PROGRAM OUTCOME FOR B. SC. BIOCHEMISTRY

Program Outcomes	**PO1:** Apply domain specific knowledge and expertise to effectively address complex challenges in professional, social and personal context. **PO2:** Cultivate a multidisciplinary mindset and contribute to the global knowledge base with a specific focus on advancing the knowledge and development of the country. **PO3:** Develop strong communication and presentation skills to enhance employability and excel in the job market. **PO4:** Foster social awareness and actively engage as responsible and proactive citizens addressing societal issues. **PO5:** Evaluate and articulate the impact of the subject on advancements in science and technology, benefitting the general population and contributing to societal development.

PROGRAM SPECIFIC OUTCOMES FOR B. SC. BIOCHEMISTRY

Program Specific Outcomes	**PSO 1**: To have advanced knowledge of the biochemistry domain. **PSO 2:** To Connect with another branch life life science. **PSO 3:** To Provide the option for higher education, disciplinary & multi-disciplinary research. **PSO 4:** To be able to work in the following sectors • Public Health Entities. • Drug Manufacturing Companies. • Blood Bank & Services. • Cancer Research Institutes. • Educational Institutes. • Industrial Laboratories. • Research Department. • Agriculture and Fisheries.

Course Outcomes B. Sc. Biochemistry

B. Sc. Semester-I

Paper-I: BIOMOLECULES & HUMAN PHYSIOLOGY	**CO1:** To Understand the basic structure of carbohydrates with their diverse functions in cellular processes. **CO2:** To Understand the Structure of lipids and the functional activities of lipids. **CO3:** Students understand the functioning of muscle and digestive systems. **CO4:** Explain the Structure of Plasma membrane and their transport
Paper-II: MICROBIOLOGY & VIROLOGY	**CO1:** To Understand the historical discoveries in the field of microbiology and components of microscope for observation of microorganisms. **CO2:** Students understand the principles of various bacterial staining methods and identify key features of viruses. **CO3:** Explain the difference between prokaryotes and eukaryotes and bacterial classification. **CO4:** To Understand the growth requirement of bacteria.

B. Sc. Semester-II

Paper-I: HUMAN PHYSIOLOGY	**CO1:** To Understand the structural and functional aspects of human excretory and reproductive systems. **CO2:** Describe blood composition and functional attributes of each blood component. **CO3:** Students understand the neuronal function and communication. **CO4:** Explain the hormonal regulatory circuitry involved in regulating cellular functions.
Paper-II: MICROBIOLOGY & IMMUNOLOGY	**CO1:** To Understand the nutritional requirements of microorganisms for growth. **CO2:** Students are able to understand the Compare and contrast mechanism of action of different microbial control agents. **CO3:** To Study the immune system and structural features of immunoglobulin. **CO4:** Give an overview of the classification and maturation of the immune system.

B. Sc. Semester-III

Paper-I: **MACROMOLECULES**	**CO1:** To Understand the chemistry of amino acids found in proteins with features responsible for the synthesis of proteins. **CO2:** Describe the structure-function relationship of proteins with parameters involved in protein folding. **CO3:** Examine factors involved in the structural dynamics of nucleic acids. **CO4:** Identify ways to examine the structural features of different forms of nucleic acids.
Paper-II: **BIOPHYSICAL TECHNIQUES I**	**CO1:** To Understand the concepts, principles, working, detection system, and applications of spectrophotometers. **CO2:** Students are able to understand the Compare various forms of spectrophotometers and develop know-how about the mechanism of action of buffers and their various types of equations. **CO3:** To Develop knowledge about fundamental principles of chromatography and possible extensions in the same. **CO4:** Get a complete overview of some common chromatographic methods and their applications.

B. Sc. Semester-IV

Paper-I: **ENZYMOLOGY**	**CO1:** Recognize various terminologies used in enzymology and will get familiarized with various models required to explain enzyme-substrate complex. **CO2:** Describe the basic mechanisms of action of some specific enzymes with factors responsible for the same. **CO3:** Derive different mathematical equations required to explain enzymes activity through graphs (Ex LB plots) and what kind of inhibitors govern them. **CO4:** Acquire knowledge about enzyme assay principles used after their purification.
Paper-II: **BIOPHYSICAL & CHEMICAL TECHNIQUES**	**CO1:** Demonstrate an understanding of the principles and techniques of gel electrophoresis, including the different types of gels, solubilizers, and the procedure for running electrophoresis with its applications. **CO2:** Identify the various specialized technical attributes of gel electrophoresis and immunological techniques. **CO3:** Identify the advantages and applications of isotopes for studies associated with biomolecules.

	CO4: Derive and recognize the mathematical principles underlying the sedimentation process for applications in biomolecular characterization.

B. Sc. Semester-V

Paper-I: **METABOLISM I**	**CO1:** Recognize and appreciate the importance of bioenergetics principles governing the progress of biochemical reactions. **CO2:** Demonstrate the knowledge of techniques used for performing metabolic studies. **CO3:** Enlist and explain the steps involved in the metabolic progression of simple sugars. **CO4:** Identify and describe the mechanisms involved metabolism of complex carbohydrates along with metabolic energy output.
Paper-II: **MOLECULAR BIOLOGY**	**CO1:** Recognize and appreciate the basic features of replication, semi-conservative replication with experimental evidence and different models of replication. **CO2:** Demonstrate the knowledge of regulatory aspects of replication along with DNA damage and repair mechanisms. **CO3:** Descriptive explanation of the mechanism of RNA synthesis and factors involved in it. **CO4:** Identify regulation of gene expression in prokaryotes, mechanisms of Lac Operon & Trp operon with viral reverse transcription as a mode of inheritance.

B. Sc. Semester-VI

Paper-I: **METABOLISM II**	**CO1:** Recognize and explain lipid metabolism as an alternative route of energy harnessing in the absence of carbohydrates through mechanisms such as Beta oxidation and HMP shunt. **CO2:** Identify and describe lipid biosynthetic pathways as routes for the synthesis of storage and structural lipids. **CO3:** Explain the principles of amino acid metabolism and detoxification strategies employed for the removal of ammonia generated therein. **CO4:** Discuss the intricacies associated with nucleic acid metabolism and diseases associated with it.
Paper-II: **MOLECULAR BIOLOGY & r-DNA TECHNOLOGY**	**CO1:** Comprehend and recognize the features of the genetic code and wobble hypothesis. **CO2:** Demonstrate the knowledge of aspects associated with the protein translation system and its regulation. **CO3:** Recognize and discuss the requirements for the performance of basic rDNA technology. **CO4:** Explain the methods utilized for the execution of complete rDNA synthesis and cloning pathway.