KONGUNADU ARTS AND SCIENCE COLLEGE

(AUTONOMOUS)

COIMBATORE – 641 029

DEPARTMENT OF BIOTECHNOLOGY (Unaided)

COURSE OUTCOMES (CO)

OF

PG DIPLOMA IN BIOINFORMATICS

For the students admitted in the Academic Year 2025 - 2026

PG AND RESEARCH DEPARTMENT OF BIOTECHNOLOGY

2025 - 2026

Programme Code:08	Program name: PG Diploma in Bioinformatics		
Subject Code: 25PDBI101	Core Paper 1 - ESSENTIALS OF BIOINFORMATICS		
Batch : 2025-2026	Total Hours 15	Credits 3	Employability/ Skill Development

COURSE OBJECTIVES

- To provide a basic understanding on theory and Applications of bioinformatics.

- To decipher the features and use of different databases for DNA, RNA and Proteins.

- To employ alignment tools to understand the complexity of biomolecules.

COURSE OUTCOMES

On successful completion of the course, the students will be able to:

K1	CO1	Capable to identify the existing biological problem and to apply the relevant omics Concept
	CO2	Able to explore the biological data to solve several issues in healthcare Domains
	CO3	Accomplish the different level of protein structure and the respective database
	CO4	Potential to recognize the similar function and structure for sequences
K5	CO5	Perform MSA to infer conserved regions and domains of biological molecules

Programme Code:08	Program name: PG Diploma in Bioinformatics	
Subject Code:25PDBI102	Core Paper 2 - PROGRAMMING IN C	
Batch : 2025-2026	Total Hours 15	Credits 2

COURSE OBJECTIVES

- To familiarize students with the programming language
- To gain knowledge of C programming language
- To enable the application of C program in real time programs

COURSE OUTCOMES

On successful completion of the course, the students will be able to:

K1	CO1	Able to write syntax and code using C program
↑ ↓ K5	CO2	Relate the importance of programming in biology
	CO3	Apply in developing tools for computational analysis of biological molecules
	CO4	Illustrate the process of data file manipulations using C
	CO5	Design programs using variety of data structures

Programme Code:08	Program name: PG Diploma in Bioinformatics		
Subject Code: 25 PDBI1CL	Core Practical I		
Batch : 2025-2026	Total Hours 15	Credits 1	**Employability/ Skill Development**

COURSE OBJECTIVES

- To understand the basic feature of different biological databases

- To retrieve information of scientific interest from the specific database

- To utilize the tools existing for nucleic acid and protein analysis

COURSE OUTCOMES

On successful completion of the course, the students will be able to:

K3 ↑ ↓ K5	CO1	Relate the biological sequence databases for computational analysis	
	CO2	Annotate the biological sequences to attain scientifically significant information	
	CO3	Implement the sequence similarity tools to acquire significant information	
	CO4	Apply the knowledge of computational tools to address the clinical problems	
	CO5	Analyze the data of gene and protein for evolutionary studies	

Programme Code:08	Program name: PG Diploma in Bioinformatics		
Subject Code: 25 PDBICM	Core Practical II		
Batch : 2025-2026	Total Hours 15	Credits 1	Employability/ Skill Development

COURSE OBJECTIVES

- To familiarize with coding and syntax for writing a program
- To understand and rectify the errors
- To relate computational programming knowledge and biological problems

COURSE OUTCOMES

On successful completion of the course, the students will be able to: able to

K3	CO1	Identify the appropriate data structure for solving real world problems
↑	CO2	Implement various kinds of searching and sorting techniques
↓	CO3	Debug the coding/syntax errors
K5	CO4	Apply the concepts of object-oriented programming
	CO5	Illustrate the process of functions and classes using C++

Programme Code:08	Program name: PG Diploma in Bioinformatics		
Subject Code: 25 PDBI203	Core Paper 3 – CHEMINFORMATICS, MOLECULAR MODELING AND DRUG DESIGNING		
Batch : 2025- 2026	Total Hours 15	Credits 3	Employability/ Skill Development

COURSE OBJECTIVES

- To introduce the basic concepts of drug designing and modeling
- To Provide impacts on various resources available for biological molecules
- To Understand the interactions between molecules using various Computational tools

COURSE OUTCOMES

On successful completion of the course, the students will be able to:

K1	CO1	Classify small molecules and interpret results from chemoinformatics analysis
	CO2	Interpret the significance of computationally modeled biomolecules
	CO3	Depict the importance of natural small molecules in pharmaceutical applications
	CO4	Apply the concepts for modern drug discovery process
K5	CO5	Demonstrate the key features to notice in target-ligand interactions

Programme Code:08	Program name: PG Diploma in Bioinformatics		
Subject Code: 25 PDBI204	Core Paper 4–PYTHON PROGRAMMING		
Batch :	Total Hours	Credits	Employability/ Skill Development
2025-2026	15	2	

COURSE OBJECTIVES

- Demonstrate the methodology to locate and download files for data analysis involving DNA andProtein structures

- Select datasets, open files and pre-process data using Python

- Develop python scripts to replace missing values, normalize data, discretize data, and sample data

COURSE OUTCOMES

On successful completion of the course, the students will be able to: able to:

K1	CO1	Relate the necessity for programming in biology
	CO2	Handle biological data with Python scripts
	CO3	Develop codes/scripts for resolving the biological data queries
	CO4	Access online resources for R and import new function packages into the Python workspace
K5	CO5	Interpret the statistical significance of genomic data in a particular disease condition

Programme Code:08	Program name: PG Diploma in Bioinformatics		
Subject Code: 25 PDBI2CN	Core Practical III		
Batch : 2024-2025	Total Hours 15	Credits 1	Employability/ Skill Development

COURSE OBJECTIVES

- To explain basic concepts of chemoinformatics
- To understand the most appropriate method (or methods) to use for a particular problem
- To develop or strengthen skills in working with computational chemistry and bioinformatics applications and databases.

K1	CO1	Analyze and validate the structure stability of computationally processed protein model
↕	CO2	Handle the different file formats of biomolecules
	CO3	Investigate the importance of therapeutic target specificity for particular diseases
	CO4	Design the biological targets and properties of the small molecule under investigation
K5	CO5	Interpret the lead compound- target interactions