

# **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 2021-2022**



**COURSE OFFERED**

**BY**

**PG AND RESEARCH DEPARTMENT OF BIOTECHNOLOGY**

**KONGUNADU ARTS AND SCIENCE COLLEGE (AUTONOMOUS)**

**COIMBATORE – 641 029**

<b>Programme Code:08</b>	<b>Program name: PG Diploma in Bioinformatics</b>			
<b>Subject Code:21PDBI101</b>	<b>Core Paper 1 - ESSENTIALS OF BIOINFORMATICS</b>			
<b>Batch : 2021-2022</b>	<b>Semester I</b>	<b>Hours / Week 2</b>	<b>Total Hours 15</b>	<b>Credits 3</b>

### **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:

<div> <div>K1</div> <div>↑</div> <div>↓</div> <div>K5</div> </div>	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
	CO5	Perform MSA to infer conserved regions and domains of biological molecules

<b>Programme Code:08</b>	<b>Program name: PG Diploma in Bioinformatics</b>			
<b>Subject Code: 21PDBI102</b>	<b>Core Paper 2 - PROGRAMMING IN C</b>			
<b>Batch : 2021-2022</b>	<b>Semester I</b>	<b>Hours / Week 2</b>	<b>Total Hours 15</b>	<b>Credits 3</b>

### **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:

<div> <div>K1</div> <div> <div>↑</div> <div>↓</div> </div> <div>K5</div> </div>	CO1	Able to write syntax and code using C program
	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

<b>Programme Code:08</b>	<b>Program name: PG Diploma in Bioinformatics</b>			
<b>Subject Code: 21PDBI1CL</b>	<b>Core Practical I</b>			
<b>Batch : 2021-2022</b>	<b>Semester I</b>	<b>Hours / Week 2</b>	<b>Total Hours 10</b>	<b>Credits 1</b>

### **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

<b>Programme Code:08</b>	<b>Program name: PG Diploma in Bioinformatics</b>			
<b>Subject Code: 21PDBI1CM</b>	<b>Core Practical II</b>			
<b>Batch : 2021-2022</b>	<b>Semester I</b>	<b>Hours / Week 2</b>	<b>Total Hours 10</b>	<b>Credits 1</b>

### **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

<div> <div>K3</div> <div> <div>↑</div> <div>↓</div> </div> <div>K5</div> </div>	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
	CO4	Apply the concepts of object-oriented programming
	CO5	Illustrate the process of functions and classes using C++



<b>Programme Code:08</b>	<b>Program name: PG Diploma in Bioinformatics</b>			
<b>Subject Code: 21PDBI204</b>	<b>Core Paper 4–Python Programming</b>			
<b>Batch : 2021-2022</b>	<b>Semester II</b>	<b>Hours / Week 2</b>	<b>Total Hours 15</b>	<b>Credits 2</b>

### **COURSE OBJECTIVES**

- To acquire programming skills in core Python and to learn and understand Python programming basics and paradigm
- To Learn core Python scripting elements such as variables and flow control structures
- To learn and understand python looping, control statements and string manipulations.
- To learn how to use exception handling in Python applications for error handling.
- To Use functions and represent Compound data using Lists, Tuples and Dictionaries
- To Read and write data from & to files in Python and develop python Application
- Master the fundamentals of writing Python scripts

### **COURSE OUTCOMES**

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

<div> <div>K1</div> <div>↑</div> <div>↓</div> <div>K5</div> </div>	CO1	Relate the necessity for programming in python
	CO2	Define and demonstrate the use of built-in data structures “lists” and “dictionary”.
	CO3	Discover how to work with lists and sequence data
	CO4	Design and implement a program to solve a real world problem
	CO5	Design and implement GUI application and how to handle exceptions and files

<b>Programme Code:08</b>	<b>Program name: PG Diploma in Bioinformatics</b>			
<b>Subject Code: 21PDBI2CN</b>	<b>Core Practical III</b>			
<b>Batch : 2021-2022</b>	<b>Semester II</b>	<b>Hours/Week 2</b>	<b>Total Hours 10</b>	<b>Credits 1</b>

### **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
K5	CO4	Design the biological targets and properties of the small molecule under investigation
	CO5	Interpret the lead compound- target interactions