



# DANTULURI NARAYANA RAJU COLLEGE

(Autonomous)

BHIMAVARAM, W.G.DIST, ANDHRA PRADESH, INDIA, PIN- 534202.

(Accredited at 'B<sup>++</sup>' level by NAAC)

(Affiliated to Adikavi Nannaya University, Rajamahendravaram)

## BIO CHEMISTRY

### SEMESTER - I

#### COURSE:-I - BIOMOLECULES

CO	COURSE OUTCOME	LEVEL
CO1	Acquire knowledge and understanding of the molecular machinery of living cells;	L1
CO2	To understanding of the principles that govern the structures of macromolecules and their participation in molecular recognition;	L2
CO3	Extend with principles and basic mechanisms of metabolic control and molecular signaling	L3
CO4	To analyze Use basic laboratory skills and apparatus to obtain reproducible data from biochemical experiments;	L4
CO5	To Understand and experimental protocols, and adapt them to plan and carry out simple investigations	L2
CO6	Analyze, interpret, and participate in reporting to their peers on the results of their laboratory experiments;	L4

### Semester - II

#### COURSE:-II- ANALYTICAL TECHNIQUES

CO	COURSE OUTCOME	LEVEL
CO1	The student will learn the various analytical techniques and their applications in separation and isolation of cells and tissues for studying their functional abnormalities	L4
CO2	The practical's will apply the expertise to the student for quantification of electrolytes and other metal ions, hormones and identification of bacteria.	L3
CO3	To Provide the knowledge by the student in this COURSE can be useful in food industries.	L1
CO4	To understand by the student in this COURSE can be useful in pharma industries.	L2
CO5	To understand by the student in this COURSE can be useful in clinical and microbiological labs.	L2
CO6	The student will learn the various analytical techniques and their applications in separation and isolation of enzymes and proteins.	L4



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**Semester – III ,**

**COURSE:-III -ENZYMOLGY, BIOENERGETICS AND INTERMEDIARY METABOLISM.**

CO	COURSE OUTCOME	LEVEL
CO1	The student will understand how the biomolecules such as carbohydrates, lipids and proteins get metabolized for the purpose of energy and other physiological functions in the body.	L2
CO2	The COURSE will enable the student to understand the pathophysiology of metabolic diseases such as diabetes, atherosclerosis etc. which occur due to alterations in metabolism.	L2
CO3	The practicals will Analyze the expertise for quantification of enzymes' activities, glucose, proteins and lipid levels in blood which will have clinical applications	L4
CO4	The student will get Knowledge how the food is digestion and absorption by hydrolytic enzymes.	L1
CO5	The COURSE will enable the student to understand to release the energy (ATP).	L2
CO6	The student will Understand how the biomolecules such as carbohydrates, lipids and proteins metabolism and catabolism in various organs like liver, kidney, stomach, brain cells and muscles.	L2

**Semester – IV ,**

**COURSE:-IV -PHYSIOLOGY, NUTRITIONAL AND CLINICAL BIOCHEMISTRY.**

CO	COURSE OUTCOME	LEVEL
CO1	This COURSE will also provide knowledge on hormones	L1
CO2	By studying this COURSE the student will Understand the nutritional importance of proteins	L2
CO3	Clinical biochemistry unit along with practicals will apply the student to do diagnostic tests for liver diseases	L3
CO4	This COURSE will also provide knowledge on normal and abnormal conditions of various organ related diseases such as kidney	L1
CO5	This COURSE will also provide knowledge on composition of food and classification of food	L1
CO6	By studying this COURSE the student will Understand the what are macro molecules	L2



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**Semester – IV ,**

**COURSE:-V - MICROBIOLOGY, IMMUNOLOGY AND MOLECULAR BIOLOGY**

CO	COURSE OUTCOME	LEVEL
CO1	The student will get knowledge in immune system, vaccines and also understand the pathogenesis of auto immune diseases and immune deficiency diseases.	L1
CO2	The practicals will Understand the expertise to the student to work in microbiology laboratory, food and pharma industries.	L2
CO3	This COURSE will provide knowledge and expertise in molecular biology such as genes, their structure and importance.	L1
CO4	This will also enable the student to apply the applications of PCR in cloning and diagnosis of genetic and viral diseases.	L3
CO5	The practicals will provide the knowledge to the student to work in Biotech companies for production of vaccines and other life-saving drugs.	L1
CO6	The student will understand in cells of immune system, organs of immune system.	L2

**Semester – V , COURSE: 6C**

**COURSE:-VI(C) -GENETIC ENGINEERING**

CO	COURSE OUTCOME	LEVEL
CO1	These COURSEs are designed to analyze the communication and vocabulary skills in the students.	L4
CO2	Upon completion of the COURSE, the students have sufficient knowledge for professional communication to excel in the chosen profession.	L1
CO3	This COURSE imparts the knowledge of basic statistical methods to solve problems.	L1
CO4	To understand the students are taught to operate various statistical software packages.	L2
CO5	Demonstrate by the end of the COURSE, the students are able to appreciate the importance of statistics in research and prepares them for a career in research.	L3
CO6	The main objective of this paper is to create an awareness among the students about the environment.	L6



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Semester – V , COURSE: 7C

COURSE:-VII(C) -BIOINFORMATICS.

CO	COURSE OUTCOME	LEVEL
CO1	Demonstrate different biological databases and tools.	L3
CO2	Apply algorithms for searching the biological databases.	L3
CO3	To Understand Categorize sequence alignment methods.	L1
CO4	To Evaluate Implement phylogenetic tree construction algorithms.	L5
CO5	Analyze gene and protein secondary structure.	L4
CO6	Analyse genomic sequence.	L4