



**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**  
 (Established by Andhra Pradesh Act No.30 of 2008)  
 Kukatpally, Hyderabad – 500 085, Andhra Pradesh (India)

**B.Tech. BIO-TECHNOLOGY**

**COURSE STRUCTURE**

**I YEAR**

Code	Subject	L	T/P/D	Credits
	English	2	-	4
	Mathematics – I	3	1	6
	Fundamentals of Biology	3	-	6
	Engineering Physics	3	-	6
	Engineering Chemistry	3	--	6
	Computer Programming	3	-	6
	Engineering Drawing	2	3	6
	Computer Programming Lab.	-	3	4
	Engineering Physics & Engineering Chemistry Lab	-	3	4
	English Language Communication Skills Lab.	-	3	4
	Engineering Workshop / IT Workshop	-	3	4
	<b>Total</b>	<b>19</b>	<b>16</b>	<b>56</b>

**II YEAR I SEMESTER**

Code	Subject	L	T/P/D	C
	Biochemistry	4	-	4
	Basic electrical and electronic engineering	4	-	4
	Cell Biology	4	-	4
	Mathematics –II	4	-	4
	Biofluid mechanics	4	-	4
	Microbiology	4	-	4
	Biochemistry Lab	-	3	2
	Cell Biology and Microbiology Lab	-	3	2
	<b>Total</b>	<b>24</b>	<b>6</b>	<b>28</b>

**II YEAR II SEMESTER**

Code	Subject	L	T/P/D	C
	Heat Transfer Operations	4	-	4
	Molecular Biology & Genetics	4	-	4
	Thermodynamics for Biotechnologists	4	-	4
	Environmental Studies	4	-	4
	Analytical Methods in Biotechnology	4	-	4
	Immunology	4	-	4
	Analytical Methods in biotechnology Lab	-	3	2
	Immunology Lab	-	3	2
	<b>Total</b>	<b>24</b>	<b>6</b>	<b>28</b>

**III YEAR I SEMESTER**

Code	Subject	L	T/P/D	C
	Mass transfer operations	4	-	4
	Biochemical Reaction Engineering	4	-	4
	Genetic Engineering	4	-	4
	Bio Ethics, Bio Safety and Intellectual Property Rights	4	-	4
	Enzyme Engineering	4	-	4
	Managerial Economics and Financial Analysis	4	-	4
	Molecular Biology and Genetic Engineering Lab	-	3	2
	Advanced English Communication skills lab	-	3	2
	<b>Total</b>	<b>24</b>	<b>6</b>	<b>28</b>

## III YEAR II SEMESTER

Code	Subject	L	T/P/D	C
	Plant Biotechnology	4	-	4
	Bioprocess Engineering	4	-	4
	Instrumentation and Process Control	4	-	4
	Probability , Statistics and Stochastic Processes	4	-	4
	<b>ELECTIVE –I</b> Industrial and Environmental Biotechnology Computational Biology Computer Organization	4	-	4
	<b>Open Elective</b> Disaster Management Intellectual Property Rights Human Values and Professional Ethics	4	-	4
	Plant Biotechnology Lab	-	3	2
	Bioprocess Engineering Lab	-	3	2
	<b>Total</b>	<b>24</b>	<b>6</b>	<b>28</b>

## IV YEAR I SEMESTER

Code	Subject	L	T/P/D	C
	Bioinformatics	4	-	4
	Transport Phenomena in Bioprocess	4	-	4
	Downstream Processing	4	-	4
	Animal Biotechnology	4	-	4
	<b>ELECTIVE –II</b> Crop improvement Structural Biology Cancer Biology Artificial Neural Networks	4	-	4
	<b>ELECTIVE –III</b> Molecular pathogenesis Biopharmaceuticals Introduction to Biomaterials	4	-	4
	Bioinformatics Lab	-	3	2
	Downstream Processing Lab	-	3	2
	<b>Total</b>	<b>24</b>	<b>6</b>	<b>28</b>

## IV YEAR II SEMESTER

Code	Subject	L	T/P/D	C
	Bioprocess optimization and plant design	4	-	4
	<b>ELECTIVE –IV</b> Food Biotechnology Nanobiotechnology	4	-	4
	<b>ELECTIVE-V</b> Clinical Trials & Regulatory Affairs Metabolic Engineering	4	-	4
	Industry Oriented Mini Project	-	-	2
	Seminar	-	6	2
	Project	-	15	10
	Comprehensive viva	-	-	2
	<b>Total</b>	<b>12</b>	<b>21</b>	<b>28</b>