JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

Kakinada-533003, Andhra Pradesh (India)

Comparison of Program Structure R16 with R19

Program Code	Program Name	Total No. of Courses		No of Subjects			Total Courses	Percentage %
		R16	R19	Added in (R19)	Deleted (R16)	Content revised more than 20%		
03	M.Tech – Biotechnology	19	20	9	1	3	13	65

Coordinator

REGISTRAR
J.N.T. University Kakinada
Kakinada-533003

Chairman, Board of Studies

Comparison of Course Structure R16 with R19

Program Code: 03   **Program Name:M.Tech - Biotechnology**   **Year : 1**   **Semester: 1**

R16					R19						Remarks		
Course code	Course name	L	T	P	C	Course code	Course name	L	T	P	C	New Course ? (R19)	Deleted Course ? (R16)	Content Revision %
1	Microbial Technology	4			3	Core-1	AdvancedBioprocessEngineering	3			3			50%
2	Bioprocessing engineering	4			3	Core-2	Immune technology	3			3			0
3	Bioinformatics	4			3	Elective -1	1 ProteinEngineering. 2. AdvancesinFermentation Technology &Downstream Processing. 3. TissueEngineering (T.E).	3			3			20%
4	Immunotechnology	4			3	Elective -2	1 MedicalBiotechnology. 2.Modeling, SimulationandOptimizationofBioprocess(MSOB). 3. Biologicaltreatmentofwastewater.	3			3			33%
5	Elective-1 1.Cancer biology 2. fermentation technology 3. Protein engineering	4			3	Core	Research Methodology and IPR	2			2	Yes		
6	Elective-2 1.Medical Biotechnology 2.BiologicalTreatment of Wastewater 3. Green Energy Technology	4			3	Lab-1	Advanced Bioprocess& Downstreamprocessing Laboratory			4	2			

7	Immunology &bio process Lab		3	2	Lab-2	ImmunotechnologyLaboratory			4	2	Yes	
					Audit – 1	Audit Course –1	2			0	Yes	
	TOTAL			2 0		**TOTAL**			1 8	3		2

Program Code: 03   **Program Name: M.Tech - Biotechnology**   **Year : 1**   **Semester: 2**

R16						R19					Remarks		
Course code	**Course name**	**L**	**T**	**P**	**C**	**Course code**	**Course name**	**L**	**T**	**P**	**C**	**New Course ? (R19)**	**Deleted Course ? (R16)**	**Content Revision %**
1	Recombinant DNA technology and Genetic engineering	4			3	Core-3	MolecularBiology&Genetic Engineering	3			3	Yes		
2	metabolic engineering	4			3	Core-4	SystemsBiology	3			3			60%
3	Bioreactor design	4			3	Elective-3	1.Advancesinbioinformatics 2.AdvancementsinBioreactor Design. 3. AgricultureBiotechnology	3			3			20
4	stem cell technology	4			3	Elective-4	1. MembraneBiology&SignalTransduction. 2. Biofuels&Bioenergy. 3. Advanced Biostatistics.	3			3			20%
5	Elective-I 1.Biopharmaceutical Technology 2.MembraneBiologyandSignal Transduction 3.Biofuels	4			3	Lab-3	MolecularBiology&GeneticEngineeringLaboratory**.**	2			2			20%
6	Elective-II 1.Molecular modeling& Drug Design 2.Food Biotechnology 3.Bio-Nanotechnology	4			3	Lab-4	Bioinformaticslaboratory			4	2	Yes		
7	GeneticEngineering & Bioinformaticslaboratory			2	2	Core	Mini Project with Seminar			4	2	Yes		

					Audit –2	Audit Course-2		2			0	Yes		
		TOTAL			2 0		**TOTAL**				1 8	4		1

Program Code:03 **Program Name: M.Tech - Biotechnology** **Year : 2** **Semester: 3**

R16						R19						Remarks		
Course code	Course name	L	T	P	C	Course code	Course name	L	T	P	C	New Course? (R19)	Deleted Course? (R16)	Content Revision %
1	Comprehensive Viva-Voce				2	Elective-V	1.Bioprocess Control and Instrumentation, 2.Molecular Modelling and Drug Design 3.Bio-nanotechnology				3	Yes		
2	Seminar – I				2	Open Elective	1. Business Analytics 2. Industrial Safety 3. Operations Research 4. Cost Management of Engineering Projects 5. Composite Materials 6. Waste to Energy				3	Yes		
3	Project Work Part – I				16	Dissertation	Dissertation Phase-I /Industrial Project (To be continued and Evaluated next Semester)*				10			
	TOTAL				20		**TOTAL**				16	2		

Program Code: 03 **Program Name: M.Tech - Biotechnology** **Year : 2** **Semester: 4**

R16						R19						Remarks		
Course code	Course name	L	T	P	C	Course code	Course name	L	T	P	C	New Course? (R19)	Deleted Course? (R16)	Content Revision %
1	Seminar – II				2	Dissertation	Dissertation Phase II (Continued from III semester)				16		Yes	
3	Project Work Part – II				18									
	TOTAL				20		**TOTAL**				16		1	

Coordinator **Chairman, Board of Studies**