

# SIR C R REDDY COLLEGE FOR WOMEN, ELURU

## Annual Curricular Plan for the Academic Year 2022 - 2023

<b>Name of the Lecturer:</b>	S. Anuradha					
<b>Name of the Department:</b>	Biotechnology					
<b>Program</b>	BSc			<b>Group:</b>	BZBT	
<b>Title of the Course:</b>	Microbiology, Cell & Molecular Biology			<b>Hrs allotted:</b>	60+30	
<b>Year</b>	2022-2023	<b>Semester</b>	II	<b>Course Code:</b>		
<b>Section</b>	I			<b>Hours/Week</b>	5	
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Unit No. & Name	Hour	Day	Date	Topic to be Covered	Methodology Adopted	Remarks
<b>Unit1:- Scope &amp; Techniques of Microbiology</b>	1	Thursday	1.6.2023	General instruction to lab and demonstration, use and care of microbial equipment (p)	P2	
	2	Friday	2.6.2023	History and contribution of Leeuwenhoek	P1	
	3	Saturday	3.6.2023	Louis Pasteur, Robert Koch	P3	
	4	Monday	5.6.2023	Joseph Lister and alexanderfleming	P1	
	5	Tuesday	6.6.2023	Ultrastructure of bacteria and growth curve	P5	
	6	Wednesday	7.6.2023	Pure culture techniques	P3	
	7	Thursday	8.6.2023	Cleaning and preparation of glassware Preparation of nutrient agar medium for bacteria	P2,P2	
	8	Friday	9.6.2023	Sterilization techniques	P4	
	9	Saturday	10.6:2023	Principles and application of physical methods (autoclave)	P1	
	10	Monday	12.6.2023	Hot air oven incineration	P1	

Unit No. & Name	Hour	Day	Date	Topic to be Covered	Methodology Adopted	Remarks
<b>Unit1:- Scope &amp; Techniques of Microbiology</b>	11	Tuesday	13.6.23023	Chemical methods and radiation methods	P1	
	13	Wednesday	14.6.2023	Simple, gram staining	P7	
	14	Thursday	15.6.2023	Preparation of PDA medium for fungi Sterilization techniques (autoclave, hot air oven,	P2	
	15	Friday	16.6.2023	Acid fast staining	P1	
<b>UNit2:- Microbial Taxonomy &amp; Metabolism</b>	16	Saturday	17.6.2023	Concepts of microbial species and strains	P3	
	17	Monday	19.6.2023	Classification of bacteria based on morphology	P1	
	18	Tuesday	20.6.2023	Classification on nutrition and environment	P1	
	19	Wednesday	21.6.2023	General characteristics, transmission	P1	
	20	Thursday	22.6.2023	Simple staining technique(p)	P2	
	21	Friday	23.6.2023	Cultivation of viruses	P7	
	22	Saturday	24.6.2023	Structure and properties of plant (tobacco mosaic virus)	P1	
	23	Monday	26.6.2023	TMV virus	P1	
	24	Tuesday	27.6.2023	Animal (Newcastle disease)	P3	
	25	Wednesday	28.6.2023	NDV	P3	
	26	Friday	30.6.2023	Human (Human immunodeficiency virus)	P9	
	27	Saturday	1.7.2023	HIV	P1	
	28	Monday	3.7.2023	Bacterial viruses (T4 PHASE)	P1	
	29	Tuesday	4.7.2023	Emerging and reemerging viruses (dengue virus)	P1	

Unit No. & Name	Hour	Day	Date	Topic to be Covered	Methodology Adopted	Remarks
Unit2:- Microbial Taxonomy & Metabolism	30	Wednesday	5.7.2023	Zoonotic viruses (rabies)	P3	
	31	Thursday	6.7.2023	Differential staining technique Microbial counting by Haemocytometer -P	P2	
	32	Friday	7.7.2023	SARS	P1	
	33	Saturday	8.7.2023	Microbial production of penicillin	P8	
	34	Monday	10.7.2023	Bacterial toxins, tuberculosis	P1	
	35	Tuesday	11.7.2023	Typhoid	P3	
	36	Wednesday	12.7.2023	Introduction to fungi, algae and mycoplasma	P1	
Unit3:- Cell structure & Functions	37	Thursday	13.7.2023	Motility test by hanging drop Biochemical identification of bacteria(p)	P2	
	38	Friday	14.7.2023	Structure, properties and functions of cellular organelles	P1	
	39	Saturday	15.7.2023	ER and Golgi Apparatus	P1	
	40	Monday	17.7.2023	Mitochondria, ribosomes & vacuoles	P1	
	41	Tuesday	18.7.2023	Cell cycle and cell division	P1	
	42	Wednesday	19.7.2023	Mitosis & Meiosis	P1,P3	
	43	Thursday	20.7.2023	Preparation of pure culture by slab, slant, streak culture(p)	P2	
	44	Friday	21.7.2023	Chemical composition and dynamic nature of the membrane and endocytic pathways	P6	
	45	Saturday	22.7.2023	Cell signaling and communication	P1	
Unit4:- DNA Replication, Repair & Regulation of gene expression	46	Monday	24.7.2023	DNA replication in prokaryotes and eukaryotes	P1,P3	
	47	Tuesday	25.7.2023	Mechanism of DNA replication and enzymes and proteins involved in DNA replication	P1,P3	

Unit No. & Name	Hour	Day	Date	Topic to be Covered	Methodology Adopted	Remarks
Unit4:- DNA Replication, Repair & Regulation of gene expression	48	Wednesday	26.7.2023	DNA damage and repair	P1	
	49	Thursday	27.7.2023	Study of stages of mitotic cell division(p)	P2	
	50	Friday	28.7.2023	Regulation of gene expression in prokaryotes( Lac & Trp Operon Concept)	P4	
Unit5:- Central dogma of Molecular Biology	51	Monday	31.7.2023	Genome organization of prokaryotic and eukaryotic organisms	P1	
	52	Tuesday	1.8.2023	Genetic Code	P1	
	53	Wednesday	2.8.2023	Prokaryotic and Eukaryotic Transcription	P1,P3	
	54	Thursday	3.8.2023	Study of stages of meiotic cell division(p)	P2	
	55	Friday	4.8.2023	Enzymes involved in Transcription	P4	
	56	Saturday	5.8.2023	Post transcriptional modifications(Capping & polyadenylation)	P1	
	57	Monday	7.8.2023	Splicing	P7	
	58	Tuesday	8.8.2023	Mechanism of Translation in prokaryotes and eukaryotes	P1,P3	
	59	Wednesday	9.8.2023	Post translational modifications( Glycosylation & Phosphorylation)	P1	
	60	Thursday	10.8.2023	Isolation of chloroplast Extraction and isolation of DNA from bacteria(p)	P2	

Signature of the Lecturer

*S. Anuradha*

Signature of the HOD

*S. Anuradha*

Signature of the Principal

*S. Anuradha*

P1- Lecture  
P6- Debate

P2- Demonstration  
P7- Quiz

P3- Audio,Video  
P8- Group Discussion

P4- Assignment  
P9- Jam

P5- Seminar  
P10- PPT

# SIR C R REDDY COLLEGE FOR WOMEN, ELURU

## Annual Curricular Plan for the Academic Year 2022 - 2023

Name of the Lecturer :	K.SATYASREE					
Name of the Department:	BIOTECHNOLOGY					
Program	BSc			Group:	BZBT	
Title of the Course:	PLANT & ANIMAL BIOTECHNOLOGY			Hrs allotted:	60	
Year	2022-23	Semester	IV	Course Code:	4A	
Section	I			Hours/Week	4hrs/w	
Unit No. & Name	Hour	Day	Date	Topic to be Covered	Methodology Adopted	Remarks
<b>UNIT-I--PLANT TISSUE CULTURE TECHNIQUES &amp; SECONDARY METABOLISM PRODUCTION</b>	1	Monday	27-03-2023	General lab rules(P)	P2	
	2	Wednesday	29-03-2023	Plant tissue culture	P1	
	3	Friday	31-03-2023	Totipotency,Media preparation--nutrients & plant hormones.	P1	
	4	Saturday	01-04-2023	Sterilization techniques	P4	
	5	Monday	03-04-2023	Establishment of cultures--Callus culture,cell suspension culture	P1	
	6	Wednesday	05-04-2023	Plant culture media& composition of MS-media(P)	P2	
	7	Thursday	06-04-2023	Applications of tissue culture--Micro propagation	P1	
	8	Saturday	08-04-2023	Somaticembryogenesis	P5	
	9	Monday	10-04-2023	Synthetic seed production.	P1	
	10	Wednesday	12-04-2023	Protoplast culture	P1	

Unit No. & Name	Hour	Day	Date	Topic to be Covered	Methodology Adopted	Remarks
UNIT--2-- TRANSGENESIS & MOLECULAR MARKERS	11	Thursday	13-04-2023	Raising of aseptic saplings	P6	
	12	Saturday	15-04-2023	Somatic hybridisation-- applications	P1	
	13	Monday	17-04-2023	Cryopreservation	P1	
	14	Wednesday	19-04-2023	Plant secondary metabolites--concept & their importance	P1	
	15	Thursday	20-04-2023	Plant transformation technology.	P7	
	16	Friday	21-04-2023	Induction of callus from explants(P)	P2	
	17	Monday	24-04-2023	Agrobacterium mediated gene transfer(Ti plasmid)	P1	
	18	Wednesday	26-04-2023	Hairy root features of Ri plasmid.	P1	
	19	Thursday	27-04-2023	Transgenic plants as Bioreactors.	P5	
	20	Friday	28-04-2023	Herbicide resistant--Glyphosate.	P1	
UNIT--3-ANIMAL TISSUE CULTURE TECHNIQUES	21	Saturday	29-04-2023	Cytology of callus(P)	P2	
	22	Monday	01-05-2023	Insect resistance--BT Cotton.	P1	
	23	Wednesday	03-05-2023	Molecular markers--RAPD	P4	
	24	Thursday	04-05-2023	RFLP	P1	
	25	Friday	05-05-2023	DNA Fingerprinting.	P1	
	26	Saturday	06-05-2023	Plant propagation through Tissue culture(shoot tip & nodal culture)(P).	P2	

Unit No. & Name	Hour	Day	Date	Topic to be Covered	Methodology Adopted	Remarks
UNIT--3-ANIMAL TISSUE CULTURE TECHNIQUES.	27	Monday	08-05-2023	Principals & applications of molecular markers.	P6	
	28	Wednesday	10-05-2023	Animal cell culture	P1	
	29	Thursday	01-06-2023	Cell culture media & reagents.	P1	
	30	Friday	02-06-2023	Culture of mammalian cells, tissues & organs.	P5	
UNIT-4-TRANSGENIC ANIMALS & GENE THERAPY	31	Saturday	03-06-2023	Establishing plant cell culture.(solid & liquid media)(P).	P2	
	32	Monday	05-06-2023	Primary culture.	P1	
	33	Wednesday	07-06-2023	Secondary culture.	P1	
	34	Thursday	08-06-2023	Cell lines.	P7	
	35	Friday	09-06-2023	Stem cell cultures	P1	
	36	Saturday	10-06-2023	Suspension cell culture(P)	P2	
	37	Monday	12-06-2023	Cell viability & cytotoxicity	P1	
	38	Wednesday	14-06-2023	Cryopreservation	P7	
	39	Thursday	15-06-2023	Transfection methods -calcium phosphate precipitation	P1	
	40	Friday	16-06-2023	electroporation	P1	
	41	Saturday	17-06-2023	Cell count by Haemocytometer(P)	P2	
	42	Monday	19-06-2023	Microinjection	P3	

Unit No. & Name	Hour	Day	Date	Topic to be Covered	Methodology Adopted	Remarks
UNIT-4-TRANSGENIC ANIMALS & GENE THERAPY	43	Wednesday	21-06-2023	Production of Vaccines,diagnostics,hormones& other recombinant DNA products in medicine--Insulin	P1	
	44	Thursday	22-06-2023	Somatostatin ,Vaccines	P1,P3	
	45	Friday	23-06-2023	IVF	P1,P3	
UNIT-5:- BIOETHICS, BIOSAFETY & IPR	46	Saturday	24-06-2023	Establishing primary cell culture of chicken embryo fibroblasts(P)	P2	
	47	Monday	26-06-2023	Concept of Gene therapy	P1	
	48	Wednesday	28-06-2023	Concept of transgenic animals Merits and demerits	P1,P3	
	49	Friday	30-06-2023	-Ethical issues in animal biotechnology	P1	
	50	Saturday	01-07-2023	Bioethics, Biosafety and IPR	P4	
	51	Monday	03-07-2023	Animal tissue culture-maintenance of established cell lines.(P).	P2	
	52	Wednesday	05-07-2023	Bioethics in cloning and stem cell research	P5	
	53	Thursday	06-07-2023	Human and animal experimentation,	P1	
	54	Friday	07-07-2023	animal rights/welfare.	P1	
	55	Saturday	08-07-2023	Bio safety-introduction to biological safety cabinets	P6	
	56	Monday	10-07-2023	Animal tissue culture-virus cultivation.(P).	P2	
	57	Wednesday	12-07-2023	primary containment for biohazards	P4	
	58	Thursday	13-07-2023	biosafety levels	P5	
	59	Friday	14-07-2023	GLP,GMP	P7	
	60	Saturday	14-07-2023	GLP,GMP	P9	

*K. Sathya*  
Signature of the Lecturer

*S. Dhuladha*  
Signature of HOD

*Sathya*  
Signature of the Principal

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# SIR C R REDDY COLLEGE FOR WOMEN, ELURU

## Annual Curricular Plan for the Academic Year 2022 - 2023

Name of the Lecturer :	N.N. Suneetha					
Name of the Department:	Biotechnology					
Program	II B.Sc BZBT				Group:	BZBT
Title of the Course:	Environmental & Industrial Biotechnology				Hrs allotted:	60
Year	2022-2023	Semester	IV			Course Code:
Section	1				Hours/Week	4
Unit No. & Name	Hour	Day	Date	Topic to be Covered	Methodology Adopted	Remarks
<b>Unit-I: Pollution Types and Control</b>	1	Monday	27-03-2023	General lab rules		
	2	Wednesday	29-03-2023	Intruduction to Pollution Types and Control	P2	
	3	Friday	31-03-2023	Air pollution & its control through Biotechnology	P1	
	4	Saturday	01-04-2023	Biofilters, Bioscrubbers	P7	
	5	Monday	03-04-2023	Detection of coliforms for determination of the purity of potable water. lab	P1	
	6	Wednesday	05-04-2023	Biotrickling filter	P1	
	7	Thursday	06-04-2023	Measurement of water, pollution, sources of water pollution	P2	
	8	Saturday	08-04-2023	Microbiology of waste water treatment, aerobic processes, activated sludge	P4	
	9	Monday	10-04-2023	Determination of total dissolved solids of water lab	P1	
	10	Wednesday	12-04-2023	Oxidation ponds,	P5	
	11	Thursday	13-04-2023	Anaerobic processes: Anaerobic digesters, upward flow anaerobic sludge blnket reactors	P3	

Unit No. & Name	Hour	Day	Date	Topic to be Covered	Methodology Adopted	Remarks
unit-2: Bioremediation	12	Saturday	15-04-2023	Introduction to Biodegradation and Bioremediation	P1	
	13	Monday	17-04-2023	Determination of Hardness and alkalinity of water sample. lab	P2	
	14	Wednesday	19-04-2023	Bioremediation of Hydrocarbons and its applications	P5	
	15	Thursday	20-04-2023	Concepts & principles of Bioremediation,	P1	
	16	Friday	21-04-2023	Degradation of pesticides and other toxic chemicals by microorganism	P3	
	17	Monday	22-04-2023	Determination of dissolved oxygen concentration of water sample lab	P2	
	18	Wednesday	23-04-2023	Role of genetically Engineered microbes,	P4	
	19	Thursday	24-04-2023	Concept of phyto remediation	P1,P3	
	20	Friday	25-04-2023	Environmental safety guidelines.	P1	
UNIT3:- Biofuels	21	Saturday	26-04-2023	Biofuels-biogas	P1	
	22	Monday	27-04-2023	Determination of biological oxygen demand of sewage sample. Lab	P2	
	23	Wednesday	28-04-2023	Factors affecting biogas production	P1	
	24	Thursday	04-05-2023	Factors affecting biogas production	P1	
	25	Friday	05-05-2023	Biofertilizers	P8	
	26	Saturday	06-05-2023	Vermiculture	P3	
Unit-4: Basic principles of Microbial Technology	27	Monday	08-05-2023	Determination of chemical oxygen demand (COD) of sewage sample.	P2	
	28	Wednesday	10-05-2023	Basic principles of Microbial technology	P1	
	29	Thursday	01-06-2023	Industrially important microbes	P1	
	30	Friday	02-06-2023	Screening	P5	
	31	Saturday	03-06-2023	Selection and identification	P1	

Unit No. & Name	Hour	Day	Date	Topic to be Covered	Methodology Adopted	Remarks
Unit5:- Commercial production of Microbial products	53	Thursday	06-07-2023	Wine production	P7	
	54	Friday	07-07-2023	Antibiotics production	P8	
	55	Saturday	08-07-2023	Pencillin production	P1	
	56	Monday	10-07-2023	Estimation of citric acid by titrimetry.	P2	
	57	Wednesday	12-07-2023	Strptomycin production	P1	
	58	Thursday	13-07-2023	Revisison	P9	
	59	Friday	14-07-2023	Revision	P4	
	60	Saturday	15-07-2023	Revision	P3	

*N. N. S...*  
Signature of the Lecturer

*S. Ch...*  
Signature of the HOD

*[Signature]*  
Signature of the Principal

<b>P1- Lecture</b>	<b>P2- Demonstration</b>	<b>P3- Audio, Video</b>	<b>P4- Assignment</b>	<b>P5- Seminar</b>
<b>P6- Debate</b>	<b>P7- Quiz</b>	<b>P8- Group Discussion</b>	<b>P9- Jam</b>	<b>P10- PPT</b>