

Shiv Chhatrpati Shikshan Sanstha' s Rajarshi Shahu Mahavidyalaya, Latur (Autonomous)

Department of Biotechnology Structured Work Plan for Teaching Academic Year 2018-19 (Term-I)

1. Details of Classes to be taught

Sr. No.	Class	Name of Asstt. Prof.	Subject	Paper
1	M.Sc. II	S. S. Kshirasagar	Biotechnology	Course Title: Plant Biotechnology Course Code: P-PLB-337
		Aber	ent butter	Course Title: Lab course XII
			ives.	Course Code:
				P-LAC-341

Sr. No.	Subject	Unit and Chapter to be covered	Date	No. of Lectures	Academic activities to be organized	No. of Test / Assignment with topic and date
1	Plant Biotechnology	UNIT I Plant Tissue Culture-I		03	31.00	Unit – I 16/07/18
		 Introduction to cell and tissue culture Tissue culture media: Composition and Preparation. Initiation and maintenance of callus and suspension culture Organogenesis: Principle, Concept and Applications of Somatic embryogenesis Rapid clonal propagation and production of virus free plants. 	22-06-18 To 14-07-18	02 02 02 01 01	Group Discussion	Unit – II 20/08/18 Unit – III 3/09/18

		plants	06-08-18	02		
		and the genetic engineering of				
		> Agrobacterium tumefaciens		02		
	14	regulation in plants	Descripted in			
		➤ Gene structure, expression, and	George	02		
		Plant molecular biology	o and beating		great "	
		UNIT III	placer's special	E MODELLE		
		10 MART	indqa iyaani		olita	
40						
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SEVERAL!			. Instantiu		Professional Professional	
Testad!		Sugarcane.			mo) :	40 F
STATE OF THE		banana and				
a draggeria	back	tissue culture technology, examples:		_		1000
ida (In pla	Harris and the same of the sam	> Commercial application of	unio esteria	03	Salati Della	al) 2 11
		conservation			. mend for	L. Suroratur
		and DNA banking for germ plasm		02		
		Cryopreservation, slow growth			£1448	
		plants and homozygouslines		02		
		culture for production of haploid	04-08-18	02		
		Anther, Pollen and Ovary				
*		rescue	16-07-18	03		
1		> Embryo culture and embryo	-	03		10
		myed see		15		
		of protoplast, regeneration of plants	74	02	4 mm = 12 l	Se de la composición de
		culture media, Growth and division		02		
		protoplast culture,	4 . 4			
		➤ Protoplast culture: Importance, Isolation of protoplasts, method of	1	02		
		N. Donaton I.	ivi talimud	12		
		UNIT II				

	 Mechanism of gene transfer from Agrobacterium to plants Strategies for gene transfer in 	To 10-09-18	04		
60 60 80	plants Molecular markers and marker assisted selection	4	04		01
	UNIT IV				
Gillon States	Transgenic Crops ➤ Crops with Tolerance / resistance to biotic stresses, viruses, fungal and bacterial		02	P Tenesier	W 1000
use, prysiky (i netnál u (gramou)	diseases: Crops with Tolerance / resistance to abiotic stresses (Herbicides and drought conditions):	11-09-18 To 15-10-18	02		
	> GM crops,		02		
	Medical applications of GM plants		02		
ب سيد المستوات الم	> Terminator technology		02		
	➤ Ecological risk assessment of genetically modified crops		01		

Sr. No.	Subject	Practicals	Date	No. of Practicals
1		Plant tissue culture laboratory design		05
2		Plant tissue culture laboratory design		05
3	- ,	Aseptic techniques	2/07/18 To	05
4	-	Media preparation	15/10/18	05
5		Micro propagation		05

6	Anther culture	1 1 1 2	05
7	Plant DNA isolation	Batch B,C,D	05
8	Protoplast isolation		05
9	Embryo culture	1 /. /	05
10	RAPD		05

HoD Head Department of Biotechonlog Rajarshi Shahu Mahavidyala (Autonomous) Latur-413 53

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1. Details of Classes to be taught

Sr. No.	Class	Name of Asstt. Professor	Subject	Paper
1	B.Sc. II	S. S. Kshirasagar	Biotechnology	Course Title: Environment Biotechnology Course Code: U-ENB-400 Course Title: Lab Course XI Course Code: U-LAC-404

Sr. No.	Subject	Unit and Chapter to be covered	Date	No. of Lectures	Academic activities to be organized	No. of Test / Assignmen t with topic and date
1	Environment	Unit I				Unit – I
	Biotechnology	elemin				11/07/18
		Components of Environment and		04		Unit – II
		Global Environmental Problems	22-06-18	Candina a	Classroom	20/08/18
		08	То	b.G. W.		Unit -III
		Hydrosphere, lithosphere,	11-07-18	(982)	Group	03/09/18
		atmosphere and biosphere -		04	Discussion	
		definitions with examples;				
		Interaction of man and				
		environment;				
		Environmental Studies as a		Set Second		
		multidisciplinary subject.		04		
		Green House Effect, Acid rain,				
		El Nino Effect,	The part of the last	10-11-2		5 134

	Ozone depletion,	Harale .	
	Biodiversity loss	Eddon	
	Unit-II:		
	Environmental pollution and Environmental Management 10 Pollution of air, water and land with reference to their causes,	13-07-18	04
	nature of pollutants & impact Environmental damage by agriculture, Perspectives of pollution in urban,	To 31-07-18	. Pand M. I. S. on The election
	industrial and rural areas. Habitat Pollution Environmental diseases –		02
Li Isaaa	infectious (Water and air borne) and pollution related, Solid waste management.		02
To 81 1 845 5	MAN, princip. revenue		03
1	Unit-III:	water to the state of	
	Waste water treatment and management		04
	Domestic Waste Water		
device average	Treatments: Preliminary, Primary,	02-08-18	Deligion (Prio) Deciglion
torning best to a gradual gradual state of the control of the cont	Secondary and Tertiary. Waste water treatment Reactors:	To 30-08-18	
Reported I	Introduction and types in brief Aerobic Biological Treatments: Activated sludge process, Lagoons		04
H - HIV	Anaerobic Biological Treatments:		musical O legislation
N. S. J. H. S. H. S. L. H. S.	upflow anaerobic sludge blanket		WAS DESCRIPTION OF THE PROPERTY OF THE PROPERT
	(UASB) reactor,		
	Fluidized bed reactor.		base with the common to the co
	the state of the s		03
	Unit IV		
	Biodegradation and Bioremediation	share p	06
		03-09-18	
	Biodegradation of Hydrocarbon	To 3-10-18	

	Xenobiotics biodegradation- pesticide biodegradation	7.0	06	. X i	
1	Bioremediation: Introduction, Definition and Concept,				*** 1
	Methods of Bioremediation (In Situ and Ex Situ Methods)			- 	
	Phytoremedation: Concept and Types	1 - 1			

Sr. No.	Subject	Practicals	Date	No. of Practicals
1		Determination of Dissolved oxygen(D.O.)		02
2		Determination of carbon dioxide(co ₂)		02
3		Determination of Biochemical oxygen demand (BOD).		02
4		Presumptive test	02/07/18	02
5	4	Confirmed test	to	02
6		Completed test	15/10/18	02
7		Determination of Chemical Oxygen demand (COD)		02
8		Determination of Hardness of given water sample.	Batch A and	02
9		Determination of PH of given water sample	В	02
10		Determination of alkalinity and chlorinity of given water sample.		04
10		Determination of alkalinity and chlorinity of given water sample.		

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Department of Biotechnology Structured Work Plan for Teaching Academic Year 2018-19 (Term-II)

1. Details of Classes to be taught

Sr. No.	Class	Name of Asstt. Professor	Subject	Paper
1	M.Sc. I	S. S. Kshirasagar	Biotechnology	Course Title: Immunology & immunotechniques Course Code: P-IMI-233
				Course Title: Lab curse VI Course Code: P-LAC-237

Sr. No.	Subject	Unit and Chapter to be covered	Date	No. of Lectures	Academic activities to be organized	No. of Test / Assignment with topic and date
1		UNITI	A series	15L		Unit – I
	9 1/E	Historical perspective and importance of Immunology	Proposition	01	odina (i	06/01/19
		Innate and Adaptive Immune response.	STATE STREET	02	dustr	
		Hematopoiesis, Cells of Immune system	03-12-18	03		
		and their biological role.	То			
		Humoral and cell mediated Immunity.	04-01-19	01		
		Primary and Secondary immune			Group Discussion	
		responses.	and when	01		
		The Primary and secondary lymphoid	Seminary 1	1 H		
		organs and their interaction,		03		
		MHC molecules,		01		
		Antigen processing and presentation	in in			
		(antigen presenting cells, endocytic, cytosolic pathway).		01		
		BCR and TCR (structure and properties),		01		
		Cytokines & signal transduction.		01		

	UNIT II	ga sa isi	12L		Unit – II
	Antigen: Characteristics of antigen & its	le Idessij	01	Home	01/02/19
	types, Factors that Influence Immunogenicity, Epitopes, Haptens and the Study of Antigenicity, adjuvant and	05-01-19 To	01	Assignment	
	its types.	29-01-19	Tanga sa	i Seria escel l'Italia	Land C
a la	Antigen engineering for better immunogenicity, Antigenicity and Immunogenicity,	us Just	01	20.23 20.23	
	Biology of superantigens.	ins engine	01		
	Antibody: Discovery of antibody structure by chemical and enzymatic Methods.		01	asternal his mal	n Sunsa
ottop ot some some some some some some some some	General Structure of antibody molecule, Function of antibody molecule. Affinity and Avidity,		01	1 000	
	Valency of Antibody. Antibodies- Types, variation in structure of antibody and their	agen ken val	01	minutes	
	biological significance. Organization and Expression of Immunoglobulin Genes.	en maneral en encont la si eskenj single-eschen	Commerce, Commer	aports (17.5%)	
of account of	ourso Company	a manyab	ozač bra: u		
	Antigen – Antibody Interaction: Strength of Antigen-Antibody Interactions, Cross-Reactivity.	pelangap iyo	01		
	Precipitation and Agglutination reactions, Radioimmunoassay, ELISA,		04	plant.	
	Western Blotting, Flow cytometry and Fluorescence, Immunoprecipitation,	NUMBER SHALL	DANIES DE	ACHA AGE	

	Immunoelectronmicroscopy,	mekster in this in a	Monthly with 1	The second of	
7	chemiluminescence assay.	१९३०, इन्हें में उन	day of the same	- 12/ 10 10 1	
	UNIT III	Pakasa adalah	10L	Mary Services	Unit – III
	and a		spherolings)	market bloom	28/02/19
	Complement system: Activation of		02	Divis year	
	Complement systems (alternative,		mar middee	Paritable 1	
	classical & lectin pathway) and its	30-01-19		O. i-	
	Functions.		Links and a	Quiz	
	Tunctions.	То	and the		
	Hypersensitivity: Hypersensitivity	26-02-19	1000	3004265	id: il
	reactions and its types.		01	MinistrO	
	reactions and its types.		om iks	t sand	
	The state of the state of the state of		mingh a	thadina .	
	Immunodeficiency Conditions: Primary		01	nangah	
	immunodeficiency (SCID), Secondary				
	immunodeficiency (AIDS).		-	7.2	T. T.
			1000	4,0005	
	Autoimmunity: Organ specific			Jane 1	
ng as t	autoimmune diseases and Systemic		02	120(0)	10.0
	autoimmune diseases.		Suedoudeed	Aggelomati	1
	autominane discuses.		ng incod	enisidad settimina	
5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1					
	Immunity to infectious diseases:		02	Harry .	
	Immune response during bacterial			Justine and the	
	(tuberculosis), parasitic (malaria) and				
	viral (HIV) infections.		eril (c. 18)		18
	Stantes				1
10	Tumor Immunology: Tumor Antigens,		5-1 5-10°B		64
	Cancer Immunotherapy		02		19
	Cancer minianomerapy				1000
	1		001	Croup discussion	Heit W
	UNIT IV		08L	Group discussion	Unit – IV
			Mary State of the		23/03/19
		27-02-19			
	Transplantation Technology: Types of	То			
	graft (auto, Iso, Allo, and xeno graft),	21-03-19	02		
	Specificity and memory of rejection		100	- L.	
	response, Mechanisms involved in			1. 1.	MA.
	graft rejection ,Bone marrow chimera.			restree? 6s	me t
17.75	grant rejection, bone marrow chimera.	40.00		1 1	
with July all play	A RETRIEGO MACION				1

Vaccine Technology: Active and Passive		54 . P	A TOTAL	
Immunization, Live attenuated		entres evi		
vaccines, subunit vaccines, conjugate		02	NO POSTALLE	ap a
vaccines, multivalent subunit vaccines,				
DNA vaccines, Recombinant vector		May see	due e il	
vaccines, edible vaccines.		20	Spire All	
The same is the			- 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
Antibody engineering: Monoclonal			Marin No. 184 Percon	
antibody, Purification of antibodies,		04	* "	
		l planter	art of Anal	
		j., K		10
	- 111 - 12	yr i redige		
		Tyrise opt		
	Immunization, Live attenuated vaccines, subunit vaccines, conjugate vaccines, multivalent subunit vaccines, DNA vaccines, Recombinant vector vaccines, edible vaccines.	Immunization, Live attenuated vaccines, subunit vaccines, conjugate vaccines, multivalent subunit vaccines, DNA vaccines, Recombinant vector vaccines, edible vaccines. Antibody engineering: Monoclonal antibody, Purification of antibodies, Chimeric antibodies, phage display, large scale production of MAb antibodies, Applications of MAb in	Immunization, Live attenuated vaccines, subunit vaccines, conjugate vaccines, multivalent subunit vaccines, DNA vaccines, Recombinant vector vaccines, edible vaccines. Antibody engineering: Monoclonal antibody, Purification of antibodies, Chimeric antibodies, phage display, large scale production of MAb antibodies, Applications of MAb in	Immunization, Live attenuated vaccines, subunit vaccines, conjugate vaccines, multivalent subunit vaccines, DNA vaccines, Recombinant vector vaccines, edible vaccines. Antibody engineering: Monoclonal antibody, Purification of antibodies, Chimeric antibodies, phage display, large scale production of MAb antibodies, Applications of MAb in

Sr. No.	Subject	Practicals	Date	No. of Practicals
1	Immunology &	Agglutination reaction	e est aniuprodures	02
2	immunotechniques	Blood film preparation & Identification of cells		02
3		Determination of bleeding time	plet of ethoresid	02
4		Determination of clotting time	description wouldn't	02
5		VDRL	03/12/19	02
6		Radial immunodiffusion,	To	02
7		Simple Double diffusion	29/03/29	02
8		Ouchterlony Double diffusion		02
9		Widal	Batch A & B	02
10		Rocket immunoelectrophoresis.	WIDHA	02
11		Microscopic observation of lymphoid organs		02

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Department of Biotechnology Structured Work Plan for Teaching Academic Year 2018-19 (Term-II)

1. Details of Classes to be taught

Sr. No.	Class	Name of Asstt. Prof.	Subject	Paper
1	M.Sc. II	S. S. Kshirasagar	Biotechnology	Course Title: Environment Biotechnology Course Code:P-ENB-435 Course Title: Lab Course XIV Course Code: P-LAC-437

Sr. No.	Subject	Unit and Chapter to be covered	Date	No. of Lectures	Academic activities to be organized	No. of Test / Assignmen t with topic and date
1	Environment	Unit-I:		12		Unit - I
	Biotechnology	Ecology & Environment:				28/12/19
		Ecosystem structure and functions,		02		
		abiotic and biotic component. Energy flow, food chain, food web. Ecological Pyramids-types.	03-12-18 To 27-12-18	02	Group Discussion	
		Biogeochemical cycles. Ecological succession, Ecads and ecotypes.	L. Janes	04		
		Ecology and its relevance to man, natural resources. Threats to Environment - Global and regional threats to the		02		

	environment.				1
7	Dagitu Walkawijetyminya, katu	titayajn	1		
	Sustainable management and			11	
	conservation of environment.	regard .			
	Agro ecology; cropping pattern as		02		
(8)	indicators of environments.				
			The other	at we could be the if	65p11 /
а .	Unit-II:		11	Home	Unit – II
	Environmental Pollution:	200	ton-of-	Assignment	23/01/19
	Classification of pollutants. Air pollution and their properties,	1 _	02	-	100
južoti jerovi, kartini se	in the state of th	28-12-18	A 2 7	1 1 1 1 1 1 1 1	
	Water pollutants and their	То	01		
	properties.	22-01-19			
	Environmental pollution and		02		
-	associated hazards to crops, animals and humans.			market Day years	
	Greenhouse effect and global warming		03	All all and	400
10.00	mild formal wheel beauty		al'a ban di	. fretslut	12
Marine Marine	Climate change - International conventions and global initiatives.		03	*	- 4091
Refine d	conventions and global initiatives.		, = 0		
gain L	Unit-III:		12		Unit -III
The state of the s			3.00	1 topographyn3	20/02/19
	Biotechnological processes:		T. Car	Quiz	
	Waste water treatment plant.		02		
The other	Physical, Chemical and Biological	23-01-19	itma calcar		
	unit operations/processes-	То			
	overview,	18-02-19	02		
	Activated Sludge Process,	gu-barret	lenigron)		
	Trickling Filters, Oxidation ponds,				
	anaerobic biological treatment	" Teric	ra-100 upul		12. 12. 1 m
	process.		Espoin		E stan
			, sa gelia		EMP
	Biotechnology in Remediation:	Kilota di B	02		
	Introduction to bioremediation,		47.0		
	Advantages, limitations and				
	applications				

	T I	Factors affecting:	Natural,			(1) L	1
			raturar,		02		
		Engineered,			02		1 49.5
face and		Ex-situ and	in-situ		f workstand		
		Phytoremediation,	alter squad p		a advisable	2	
	1	Bioaugmentation, Bios	stimulation.			_	
	F	Bioconversion,					
	I	Bioaccumulation,					
	I	Bioconcentration,				1-8-6	
	I	Biomagnification, Biode	egradation.		02	1	1
	- (Issoria)		and a			a rether l'eath	0
and a section	The state of the s	Energy &	Biofuels:		02		
	in the same of the	Energy from	Biomass.				
	I	Biosensors and	biochips,				
	I	Bio	filters,		X 100		
	I	Biofuel cells.					
	I	Unit IV			10		
	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Advancement in env	ironmental			Group discussion	Unit -III
	t	echnology		19-02-19	* 7		25/03/19
		Remote sensing and GIS		То	03	Taken taken in	
	t	erminologies and object	tives.	24-03-19			
		Types of remote sensing	5.		04		
		Applications of Remote					
]	Ecological / Niche Environmental Impact Case Study.	modeling. Assessment		03		

Sr. No.	Subject	Practical	Date	No. of practical
1	Environment	Estimation of T.S. / T.D.S. from given water sample.		02
2	Biotechnology	Estimation of Hardness of given water sample.	150, 150	02
3		Determination of Presumptive test	Special Control	02
4		To perform Confirmed test	E .	02
5		Analysis of Completed test		02
6		Gram staining of coliform group of bacteria		02
7		Determination of Biological Oxygen Demand of polluted water.	03-12-18	02
8		Determination of Dissolved Oxygen of polluted water.	to	02

9	Determination of Chemical Oxygen Demand of polluted water.	28-03-19	02
10	Isolation of pathogens from air	1	02
11	Isolation of pathogens from water	Batch A and	
12	Estimation of alkalinity of given sample.	В	02

HoD

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