

1.3.2 Average percentage of courses that include experiential learning through project work/field work/internship during the year

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Sr. No.	Programme	Level	Course Name including Filed Work/Project Work etc.	Page No.
1	B.Sc.	2 nd Year	Genetics and Molecular Biology	2
2	B.Sc.	2 nd Year	General Microbiology and Immunology	3
3	B.Sc.	2 nd Year	Plant Biotechnology and Animal Biotechnology	4
4	B.Sc.	3 rd Year	Project Work	5
5	M.Sc.	2 nd Year	Project Work	6

Affiliating university curriculum

B.Sc. II Biotechnology Syllabus w.e.f. June 2020-21

(<https://su.digitaluniversity.ac/WebFiles/MSc%20I%20Biotechnology%20syllabus%2015072020.pdf>)

PRACTICALS

PRACTICAL COURSE: DSC 1C & 1D GENETICS AND MOLECULAR BIOLOGY

Sr. No	Practical Title
1.	Meiosis in Flower Buds of <i>Allium cepa</i> -Acetocarmine Stain
2.	Study of Mendelian Traits
3.	Problem sets in Mendelian inheritance, single point, two point crosses and gene interaction & gene mapping
4.	Induction of Polyploidy
5.	Identification of mutant phenotypes- Body shape / nature of wings / eye colour in <i>Drosophila</i> .
6.	Sex-Linked Inheritance in <i>Drosophila melanogaster</i>
7.	Preparation of Salivary Gland Chromosomes
8.	Culture maintenance of <i>Drosophila</i>
9.	Spontaneous mutation: Fluctuation test – StrR
10.	Examples based on Hardy Weinberg Equilibrium
11.	Isolation of bacterial DNA
12.	Isolation of Plasmid DNA
13.	Isolation of DNA from animal cell / plant cell / yeast cells
14.	Isolation of DNA from yeast cells
15.	Isolation of RNA from yeast
16.	Isolation of RNA from plant cells / tissue
17.	Separation of nucleotides by column chromatography
18.	Isolation of coli phages
19.	Transfer of genetic material – Transformation
20.	Transfer of genetic material – Conjugation
21.	Transfer of genetic material – Transduction
22.	Visit to Molecular Biology Laboratory OR Review of recent advances in Molecular Biology or Molecular Genetics thereby submitting a brief report


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PRACTICAL COURSE: DSC 2C & 2D GENERAL MICROBIOLOGY AND IMMUNOLOGY

Sr. No	Practical Title
1	Study of Compound Microscope
2	Demonstration of Laboratory Equipments: Incubator, Autoclave, Hot Air Oven, Centrifuge, Laminar Air flow, Colony counter.
3	Monochrome staining
4	Negative staining
5	Gram staining
6	Hanging drop technique
7	Cell wall staining
8	Mounting & Identification of Fungi
9	Isolation of <i>E. coli</i> on differential media (Streak plate technique)
10	IMViC test
11	Enumeration of microorganisms from Soil by SPC (Pour Plate technique)
12	Enumeration of microorganisms from Soil by SPC (Spread plate technique)
13	Growth curve
14	Latex agglutination test
15	Coomb's test
16	Ouchterlony procedure
17	Counter current immunoelectrophoresis
18	Rocket immunoelectrophoresis
19	Widal Test (Qualitative and Quantitative)
20	VDRL Test
21	Visit to any recognize Biochemistry and Microbiology (or Pathology lab) laboratory OR Review of recent advances in Techniques in Biochemistry/Immunology thereby submitting a brief report



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PRACTICAL COURSE: DSC 3C & 3D PLANT BIOTECHNOLOGY AND ANIMAL BIOTECHNOLOGY

Sr. No	Practical Title
1.	Initiation and establishment of cell suspension culture.
2.	Protoplast fusions and culture by calcium ion or polyethylene glycol (PEG) method.
3.	Isolation of Ti plasmid from <i>Agrobacterium tumefaciens</i> .
4.	Anther culture and production of haploids.
5.	Synthetic seed production.
6.	Sterilization techniques: Theory and Practical: Glass ware sterilization, Media sterilization,
7.	Laboratory sterilization
8.	Sources of contamination and decontamination measures.
9.	Preparation of Hanks Balanced salt solution
10.	Preparation of Minimal Essential Growth medium
11.	Isolation of lymphocytes for culturing
12.	DNA isolation from animal tissue
13.	Quantification of isolated DNA.
14.	Resolving DNA on Agarose Gel.
15.	Cell Viability test by dye uptake assay
16.	Cell Viability test by dye exclusion assay
17.	Visit to biotechnology or tissue culture lab. And their by submitting the brief report.

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B.Sc. III Biotechnology Syllabus w.e.f. 2018-19

(<http://su.digitaluniversity.ac/WebFiles/MSD%20BOS%20B%20Sc%20III%20Biotechnology%202018.pdf>)

w.e.f. 2018-19

SOLAPUR UNIVERSITY, SOLAPUR Faculty of Science, CBCS Structure for B.Sc. - III Biotechnology

Theory - Semester V

Paper No.	Title of Paper	Hrs/Week			Paper Marks	UA	CA	Credits
		L	T	P				
Ability Enhancement Course(AECC)	Compulsory English (Paper III)	4	-	-	100	70	30	4
Core-BT 301	Plant Development	3	-	-	100	70	30	3
Core- BT 302	Fermentation Technology	3	-	-	100	70	30	3
Core- BT 303	Tools and Techniques	3	-	-	100	70	30	3
DSE- BT 304-A	Recent Trends in Biotechnology	3	-	-	100	70	30	3
DSE- BT 304-B	Introduction to Biotechnology based Industries	3	-	-	100	70	30	3
Total		12	-	-	500	350	150	12

Theory - Semester VI

Paper No.	Title of Paper	Hrs/Week			Paper Marks	UA	CA	Credits
		L	T	P				
Ability Enhancement Course(AECC)	Compulsory English(Paper IV)	4	-	-	100	70	30	3
Core-BT 305	Animal Development	3	-	-	100	70	30	3
Core- BT 306	Food and Dairy Technology	3	-	-	100	70	30	3
Core- BT 307	Bioinformatics and Nanotechnology	3	-	-	100	70	30	3
DSE- BT 308-A	Applications of Biotechnology	3	-	-	100	70	30	3
DSE- BT 308-B	Quality Standard Practices in Biotechnology	3	-	-	100	70	30	3
Total		12	-	-	500	350	150	12

Practical Annual

Paper No.	Title of Paper	Hrs/Week			Paper Marks	UA	CA	Credits
		L	T	P				
Paper-Core-BT 301 Paper-Core BT 303 Paper-Core BT-305	Laboratory Course VIII	-	-	5	100	70	30	3
Paper-Core-BT-302 Paper-Core-BT-306 Paper- Core-BT-307	Laboratory Course IX	-	-	5	100	70	30	3
Paper-DSE- BT 304-A OR Paper-DSE-BT-304-B and Paper-DSE- BT-308-A OR Paper-DSE-BT-308-B	Laboratory Course X	-	-	5	100	70	30	3
Project Work	Laboratory Course XI	-	-	5	100	70	30	3
Total		-	-	20	400	280	120	12

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M.Sc. II Biotechnology Syllabus w.e.f. 2017-18

(<http://su.digitaluniversity.ac/WebFiles/M%20Sc%20%20Biotechnology.pdf>)



SOLAPUR UNIVERSITY, SOLAPUR
Syllabus for M. Sc. Biotechnology Part - II
(w. e. f. June, 2017-18)

COURSE STRUCTURE
SEMESTER-IV

M. Sc. II- BIOTECHNOLOGY CBCS w. e. f. 2017-18 (REVISED) SEMESTER-IV									
SEM-IV	Code	Title of the Paper	Semester Exam.			L	T	P	Credits
Biotech		Hard Core	UA	IA	Total				
	HCT 4.1	Animal Biotechnology and Stem Cell technology	70	30	100	4	---	---	4
	HCT 4.2	Advanced analytical Techniques	70	30	100	4	---	---	4
	HCT 4.3	Research Methodology and IPR	70	30	100	4	---	---	4
		Soft Core(Any one)					---	---	
	SCT 4.1	Medical Biotechnology and Bio-nanotechnology	70	30	100	4	---	---	4
	SCT 4.2	Advanced Pharmacognosy	70	30	100	4	---	---	
		Tutorial			25		1		1
	PRACTICALS/PROJECT WORK								
	MP 4.1	Major Project	140	60	200	---	---	8	8
			420	180	625	---	---		25
M. Sc I year					1250				50
M. Sc II year					1250				50
Grand Total					2500				100

** L = Lecture T = Tutorials P = Practical IA=Internal Assessment
 ** UA= University Assessment
 ** 4 Credits of Theory = 4 Hours of teaching per week
 ** 2 Credits of Practical = 4 hours per week
 ** HCT = Hard core theory
 ** SCT = Soft core theory

** HCP = Hard core practical
 ** SCP = Soft core practical
 ** OET = Open elective theory
 ** OEP = Open elective practical
 ** MP = Major project

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