

SemesterIII

S.No.	Course/ Credits	SubjectCode	CourseTitle	Hours/Week	Credit
1.	DSC	DSC-I.3BT	GeneticEngineering	3	3
2.	DSC	DSC-II.3BT	BioprocessEngineering& Technology	3	3
3.	DSC	DSC-III.3BT	Bioinformatics and ComputationBiology	3	3
4.	DSC-LC	DSC-LC-I.3BT	GeneticEngineering	6@	2
5.	DSC-LC	DSC-LC-II.3BT	BioprocessEngineering& Technology	6*	1.5
6.	DSC-LC	DSC-LC-III.3BT	Bioinformatics and ComputationBiology	3	1.5
7.	DSE	DSE-I.3BT	Elective		2
8.	DSE	DSE-II.3BT	Elective		2
9.	RP	RP-3BT	ResearchProject	4	4
11.	Seminars			1	-
12.	Internal Assessment/ Evaluation			1	-
	Total				22

Note:

1. *Practical6Hourscomprises3hourshands-onand3hoursPreparation,incubationand observation.

2. @Practical6Hourscomprises4hourshands-onand2hoursPreparation,incubationand observation.

DSE(DisciplineSpecificElective)

DSE-A CancerBiology;DSE-BMolecularBasisofDrugDiscovery;DSE-CClinicalTrial& Research; DSE-DPhyto secondary Metabolites and its Bioactivity;DSE-E Nanobiotechnology; DSE-FDNA Fingerprinting, DSE-G Vaccines; DSE-H IPR

OEC(Optional)canbestudiedduringsemesterItoIV

SemesterIV

S.No.	Course/ Credits	SubjectCode	CourseTitle	Hours/Week	Credit
1.	DSC	DSC-I.4BT	AnimalCellScienceand Technology	3	3
2.	DSC	DSC-II.4BT	IndustrialBiotechnology	3	3
3.	DSC	DSC-III.4BT	Environmental Biotechnology	3	3
4.	DSC-LC	DSC-LC-I.4BT	AnimalCellScienceand Technology	6@	2
5.	DSC-LC	DSC-LC-II.4BT	IndustrialBiotechnology	6*	1.5
6.	DSC-LC	DSC-LC-III.4BT	Environmental Biotechnology	6*	1.5
7.	DSE	DSE-I.4BT	Elective	2	2
8.	DSE	DSC-II.4BT	Elective	2	2
9.			ResearchProject	12	6
11.	Seminars			1	-
12.	Internal Assessment/ Evaluation			1	-
				45	24

Note:

1. *Practical6Hourscomprises3hourshands-onand3hoursPreparation,incubationand observation.

2. @Practical6Hourscomprises4hourshands-onand2hoursPreparation,incubationand observation.

DSE(DisciplineSpecificElective)

DSE-A CancerBiology;DSE-BMolecularBasisofDrugDiscovery;DSE-CClinicalTrial& Research; DSE-DPhyto secondary Metabolites and its Bioactivity;DSE-E Nanobiotechnology; DSE-FDNA Fingerprinting, DSE-G Vaccines; DSE-H IPR

OEC(Optional)canbestudiedduringsemesterItoIV

AppendixA1

FACULTY:

SchemeofTeaching,Learning,Examination&EvaluationleadingtoTwoYearsPGDegreeMasterofScience(Biotechnology)followingThreeYears
UGProgrammewef 2023-24 (Two Years- Four Semesters Master’s Degree Programme- NEPv23with Exit and Entry Option
M.Sc.(Biotechnology)FirstYearSemester-I

S. N.	Subject	Type of Course	Subject Code	Teaching & Learning Scheme							Duration of Exam Hours	Examination & Evaluation Scheme								
												Maximum Marks					Minimum Passing			
				Teaching Period Per Week				Credits				Theory		Practical		Total Marks				
				L	T	P	Total	L/T	Practical	Total			Theory Internal	Theory External	Internal		External	Marks Internal	Marks External	Grade
1	Research Methodology-I	Th-Major	RM-I,1BT	2			2	2		2	1.5	50				50	20		P	
2	Research Methodology-II Classic Discoveries	Th-Major	RM-II.2	2			2	2		2	1.5	50				50	20		P	
2	DSC-I.1 Biochemistry	Th-Major	DSC-I.1BT	3			3	3		3	3	40	60			100	12	24	P	
3	DSC-II.1 Cell Biology	Th-Major	DSC-II.1	3			3	3		3	3	40	60			100	12	24	P	
	DSC-III.1 Molecular Biology	Th-Major	DSC-III.1BT	3			3	3		3	3	40	60			100	12	24	P	
4	DSE-I.1/MOOC	Th-Major Elective	DSE-I.1BT	2			2	2		2	1.5	50				50	20		P	
	DSE-II.1/MOOC	Th-Major Elective	DSC-II.1BT	2			2	2		2	1.5	50				50	20		P	
5	DSC-I.1 Lab-Biochemistry and Analytical Techniques	Pr-Major	DSC-LC-I.1BT			6*	6*		1.5	5	12			50	50	100	50		P	

6	DSC-II.1LabCellBiology	Pr-Major	DSC-LC-II-1 BT			6*	6*		1.5									
6	DSC-III.1LabMolecularBiology	Pr-Major	DSC-LC-III.1BT			6@	6@		2									
8	#OnJobTraining,Internship/Apprenticeship;FieldprojectsRelated to Major @ duringvacationscumulatively	RelatedtoDSC		120HourscumulativelyduringvacationsofSemesterIandSemester II						4**								P*
9	Co-curricular Courses: Healthandwellness, Yoga Education,Sportsand Fitness, CulturalActivities,NSS/NCC,Fine/Applied/Visual/PerformingArtsDuringSemesterI,II,IIIandIV	Generic Optional		90HoursCumulativelyFromSemItoSemIV														
	TOTAL									23						600+50**		

L:Lecture,**T:**Tutorial,**P:**Practical/Practicum

Pre-requisiteCoursemandatory ifapplicable:**Prq**,Theory :**Th**,Practical/Practicum:**Pr**,Faculty SpecificCore:**FSC**,DisciplineSpecificCore:**DSC**,DisciplineSpecificElective:**DSE**,Laboratory:**Lab**,**OJT**:OnJobTraining:Internship/Apprenticeship;Fieldprojects:**FP**;**RM**:ResearchMethodology;ResearchProject:**RP**,**Co-curricularCourses:CC**

Note:

*Practical6Hourscomprises3hourshands-onand3hoursPreparation,incubationandobservation.2.@Practical6Hourscomprises4hourshands-onand2hoursPreparation,incubationandobservation.

#OnJobTraining,Internship/Apprenticeship;Fieldprojects**RelatedtoMajor(DuringvacationsofSemesterIandSemesterII)fordurationof120hours mandatory toallthestudents,tobecompletedduring vacationsof Semester I and/or II.This will carry 4 Credits for learning of 120 hours. Its credits and grades will be reflected in Semester II credit grade report.**

Note:**Co-curricular Courses:** In additiontotheabove, CCalsoincludebut not limitedtoAcademic activities likepaperpresentationsinconferences,Aavishkar, start-ups, Hackathon, Quizcompetitions, Articlepublished,Participationin Summerschool/WinterSchool/Shorttermcourse,ScientificSurveys,SocietalSurveys,Field Visits,Studytours,IndustrialVisits,online/offlineCourseson Yoga(YogaforIQdevelopment,YogaforEgodevelopment, YogaforAngerManagement,YogaforEyesight Improvement, Yogafor Physical Stamina, Yoga for StressManagement, etc.). These can be completed cumulativelyduring **Semester I, II, IIIandIV. Its credits andgrades will be reflected insemester IVcreditgrade report.**

			LC-II. 2BT															
7	DSC-III.2LabPlantBiotechnology	Pr-Major	DSC- LC-III. 2BT			6*	6		1.5									
9	#OnJobTraining,Internship/A pprenticeship;FieldprojectsRe lated to Major @ duringvacationscumulativel y	RelatedtoMaj or		120Hourscu mulatively duringvacat ionsofSeme ster I andSemesterII						4**								P*
8	Co-curricular Courses:Healthandwellness,Yoga Education,Sports andFitness, CulturalActivities, NSS/NCC, Fine/Applied/Visual/Performing ArtsDuring Semester I, II, IIIandIV	Generic Optional		90HoursCu mulativelyFro mSemItoSemI V														
				ExitOptionwithaPGDiplomawith4CreditsOn-the-jobtraining/internshipintherespectiveMajorsubject • StudenthastoearnTotalminimum4CreditscumulativelyduringVacationsofSemesterIandSemesterIIfrominternshipinordertoexitafterFirstYearwithPGDiploma (42-44 Credits) after Three Year UG Degree														
	TOTAL									19+4*						500		

L:Lecture,T:Tutorial,P:Practical/Practicum

Pre-requisiteCoursemandatoryifapplicable:**Prq**,Theory:**Th**,Practical/Practicum:**Pr**,FacultySpecificCore:**FSC**,DisciplineSpecificCore:**DSC**,DisciplineSpecificElective:**DSE**, Laboratory:**Lab**,**OJT**:OnJobTraining;Internship/Apprenticeship;Fieldprojects: **FP**; **RM**: ResearchMethodology; Research Project: **RP**, **Co-curricular Courses**: CC

Note:*Practical6Hourscomprises3hourshands-onand3hoursPreparation,incubationandobservation.2.@Practical6Hourscomprises4hourshands-onand2hoursPreparation,incubationandobservation.

#OnJobTraining,Internship/Apprenticeship;Fieldprojects**RelatedtoMajor(DuringvacationsofSemesterIandSemesterII)fordurationof120hours mandatory toallthestudents,tobecompleteddduring vacationsof Semester I and/or II.**

Thiswillcarry4Creditsforlearningof120hours.ItscreditsandgradeswillbereflectedinSemesterIIcreditgradereport.

Note:**Co-curricular Courses**: In additiontotheabove, CCalsoincludebut not limitedtoAcademic activities likepaper presentationsinconferences,Aavishkar, start-ups, Hackathon, Quizcompetitions, Articlepublished,Participationin Summerschool/WinterSchool/Shorttermcourse,ScientificSurveys,SocietalSurveys,Field Visits,Studytours,IndustrialVisits,online/offlineCourseson Yoga(YogaforIQdevelopment,YogaforEgodevelopment, YogaforAngerManagement,YogaforEyesight Improvement, Yogafor Physical Stamina, Yoga for StressManagement, etc.). These can be completed cumulativelyduring **Semester I, II, IIIandIV. Its credits andgrades will be reflected insemester IVcreditgrade report.**

SantGadgeBabaAmravatiUniversityAmravati FACULTY

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Scheme of Teaching, Learning, Examination & Evaluation leading to Two Years PG Degree Master of Science (Biotechnology) following Three Years UG Programme w.e.f 2023-24 (Two Years- Four Semesters Master’s Degree Programme- NEP v23) with Exit and Entry Option

M.Sc.(Biotechnology) Second Year Semester-III

S. N.	Subject	Type of Course	Subject Code	Teaching & Learning Scheme							Duration Of Exam Hours	Examination & Evaluation Scheme							
												Maximum Marks					Minimum Passing		
				Teaching Period Per Week				Credits				Theory		Practical		Total Marks			
				L	T	P	Total	L/T	Practical	Total			Theory Internal	Theory External	Internal		External	Marks Internal	Marks External
1	DSC-I.3-Genetic Engineering	Th-Major	DSC-I.3 BT	3			3	3		3	3	40	60			100	12	24	P
2	DSC-II.3 Bioprocess Engineering & Technology	Th-Major	DSC-II.3 BT	3			3	3		3	3	40	60			100	12	24	P
3	DSC-III.3 Bioinformatics & Computational Biology	Th-Major	DSC-III.3 BT	3			3	3		3	3	40	60			100	12	24	P
4	DSE-I.3/MOOC	Th-Major Elective	DSE-I.3 BT	2			2	2		2	1.5	50				50	20		P
5	DSE-II.3/MOOC	Th-Major Elective	DSC-II.3 BT	2			2	2		2	1.5	50				50	20		

																	MinimumPassin gMarks	
4	DSC-I.3Lab/PrGeneticEngineering	Pr-Major	DSC- LC-I.3 BT			6@	6@		2	5	12			50	50	100	50	P
5	DSC-II.3 Lab BioprocessEngineering&Technolo gy	Pr-Major	DSC- LC-II.3 BT			6*	6*		1.5									P
5	DSC-III.3 LabBioinformatics&ComputationalB iology	Pr-Major	DSC- LC-III.3 BT			6*	6*		1.5									P
7	ResearchProjectPhase-I	Major	RP-I. 3BT		2	4	6	2	2	4				50	--	50	25	P
8	Co- curricularCourses:Healthand wellness, YogaEducation, SportsandFitness,CulturalAct ivities,NSS/NCC, Fine/Applied/Visual/PerformingA rts During Semester I, II, IIIandIV	Generic Optional		90HoursCu mulatively FromSemI toSemIV														
	TOTAL									22						550		

L:Lecture,T:Tutorial,P:Practical/Practicum
Pre-requisiteCoursemandatoryifapplicable:**Prq**,Theory:**Th**,Practical/Practicum:**Pr**,FacultySpecificCore:**FSC**,DisciplineSpecificCore:**DSC**,DisciplineSpecificElective:**DSE**, Laboratory:**Lab**,**OJT**:OnJobTraining;Internship/Apprenticeship;Fieldprojects: **FP**; **RM**: ResearchMethodology; Research Project: **RP**, **Co-curricular Courses**: **CC**
Note: *Practical6Hourscomprises3hourshands-onand3hoursPreparation,incubationandobservation.2.@Practical6Hourscomprises4hourshands-onand2hoursPreparation,incubationandobservation.
#OnJobTraining,Internship/Apprenticeship;Fieldprojects**RelatedtoMajor(DuringvacationsofSemesterIandSemesterII)fordurationof120hours mandatory toallthestudents,tobecompletedduring vacationsof Semester I and/or II.**
Co-curricularCourses:In additiontotheabove,CCalsoincludebutnotlimitedtoAcademicactivitieslikepaperpresentationsinconferences,Aavishkar,start-ups,Hackathon,Quizcompetitions,Articlepublished,ParticipationinSummerschool/WinterSchool/Short termcourse,ScientificSurveys, SocietalSurveys, Field Visits, Studytours, IndustrialVisits,online/offlineCourses on Yoga (Yoga for IQdevelopment,Yoga forEgodevelopment,Yoga for AngerManagement, Yoga forEyesight Improvement, Yoga forPhysical Stamina, Yoga for StressManagement, etc.). These can be completed cumulativelyduring **Semester I,II, IIIand IV. Its credits andgrades will be reflected insemester IVcreditgrade report.**

SantGadgeBabaAmravatiUniversity,Amravati FACULTY

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SchemeofTeaching, Learning, Examination&EvaluationleadingtoTwoYearsPGDegreeMasterofScience(Biotechnology)followingThreeYears
UGProgrammewef 2023-24 (Two Years- Four Semesters Master’s Degree Programme- NEPv23with Exit and Entry Option

M.Sc.(Biotechnology)SecondYearSemester-IV[Level6.5]

S. N.	Subject	Type of Course	Subject Code	Teaching & Learning Scheme							Duration Of Exam Hours	Examination & Evaluation Scheme							
												Maximum Marks					Minimum Passing		
				Teaching Period Per Week				Credits				Theory		Practical		Total Marks			
				L	T	P	Total	L/T	Practical	Total			Theory Internal	Theory External	Internal		External	Marks Internal	Marks External
1	DSC-I.4 Animal Cell Science & Technology	Th-Major	DSC-I.4 BT	3			3	3		3	3	40	60			100	12	24	P
2	DSC-II.4 Industrial Biotechnology	Th-Major	DSC-II.4 BT	3			3	3		3	3	40	60			100	12	24	P
3	DSC-III.4 Environmental Biotechnology	Th-Major	DSC-III.4 BT	3			3	3		3	3	40	60			100	12	24	P
4	DSE-IV.1/MOOC	Th-Major Elective	DSE-I.4 BT	2			2	2		2	1.5	50				50	20		P
4	DSE-IV.2/MOOC	Th-Major Elective	DSE-II.4 BT	2			2	2		2	1.5	50				50	20		P

																	MinimumPassingMarks	
5	DSC-I.4LabAnimalCellScience&Technology	Pr-Major	DSC-LC-I.4BT			2	6@	6@	2	5	12			50	50	100	50	P
6	DSC-II.4LabIndustrialBiotechnology	Pr-Major	DSC-LC-II.4BT			2	6*	6*	1.5									P
7	DSC-III.4LabEnvironmentalBiotechnology	Pr-Major	DSC-LC-III.4BT			2	6*	6*	1.5									P
9	ResearchProjectPhase-II	Major			2	8	10	2	4	6	3			75	75	150	75	P
10	Co-curricularCourses:Healthandwellness, YogaEducation, SportsandFitness,CulturalActivities,NSS/NCC, Fine/Applied/Visual/PerformingArts During Semester I, II, IIIandIV	GenericOptional		90HoursCumulativelyFromSemI toSemIV														
	TOTAL									24						650		

L:Lecture,T:Tutorial,P:Practical/Practicum

Pre-requisiteCoursemandatoryifapplicable:Prq,Theory:Th,Practical/Practicum:Pr, FacultySpecificCore:FSC, DisciplineSpecificCore:DSC, DisciplineSpecificElective:DSE, Laboratory:Lab,OJT:OnJobTraining; Internship/Apprenticeship;Fieldprojects: FP; RM: ResearchMethodology; Research Project: RP, Co-curricular Courses: CC

Note:Co-curricular Courses: In additiontotheabove, CCalsoincludebut not limitedtoAcademic activities likepaperpresentationsinconferences,Aavishkar, start-ups, Hackathon, Quizcompetitions, Articlepublished,Participationin Summerschool/WinterSchool/Shorttermcourse,ScientificSurveys,SocietalSurveys,Field Visits,Studytours,IndustrialVisits,online/offlineCourseson Yoga(YogaforIQdevelopment,YogaforEgodevelopment, YogaforAngerManagement,YogaforEyesight Improvement, Yogafor Physical Stamina, Yoga for StressManagement, etc.). These can be completed cumulativelyduring Semester I, II, IIIandIV. Its credits andgrades will be reflected insemester IVcreditgrade report.