MSc Course Curriculum (2022-25 batch)

Semester I

Course Code	Course Title	L	T	P	C	Instructor(s)	Slot
BB 402	Cell Biology	2	1	0	6	SKGhosh	–
BB 405	Molecular Biology	2	1	0	6	SRShinde	–
BB 421	Genetics [FH]	3	0	0	3	S Kumar	–
BB 521	Biochemistry and Bioenergetics	2	1	0	6	PV Balaji	–
BB 523	Mathematical and Numerical Methods for Biologists	2	1	0	6	D Agrawal	–
BB 525	Biological Thermodynamics and Kinetics [SH]	2	1	0	3	Ranjith P	–
BB 553	Bioinformatics	1	0	4	6	P Bhaumik	–
Total number of credits: 36 Total number of contact hours: 20 h (16 h theory + 4 h lab) per week							

Semester II

Code	Course Title	L	T	P	C	Instructor(s)	Slot
First Half							
BB 412	**Genomics and Proteomics**	3	0	0	3	SS* + KK	
BB 520	**Analytical Biochemistry**	2	1	0	3	P Phale	
BB 522	**Microbiology**	2	1	0	3	R Patkar	
BB 524	**Genetic Engineering**	3	0	0	3	A Banerjee	

BB 526	**Biomolecular Spectroscopy**	2	1	0	3	A Kumar	
Total number of credits: 15 **Total number of contact hours: 15 h theory per week**							
Second Half							
BB 528	Lab: **iLab: Integrated Biochemistry, Microbiology, Genetic Engineering and Biophysics laboratory**	0	0	30	15	S Patankar*+ R Patkar+ S Kumar+ SR Shinde	–
Total number of credits: 15 **Total number of contact hours: 30 h lab per week**							

Semester III

Code	Course Title	L	T	P	C	Instructor(s)	Slot
BB 505	Molecular Immunology	2	1	0	6	S Kumar	8
BB 519	Project Proposal Presentation and Dissertation	0	0	0	10	S Nair	–
BB 527	Molecular Enzymology [SH]	2	1	0	3	PV Balaji	2
BB 529	Research Methodology and Scientific Communication Skills [SH]	3	0	0	3	S Patankar	10
	Elective I [one full semester course or two half semester courses] (Department or Institute Elective)				6/8		
	Elective II [one full semester course or two half semester courses] (Department or Institute Elective)				6/8		

Total number of credits: 34 to 38
Total number of contact hours: 12-18 h (10-12 h theory + 0-8 h lab) per week depending upon the Elective one chooses

Elective I & II

Code	Course Title	L	T	P	C	Instructor(s)	Slot
BB 414	Molecular Diagnostics [FH]	3	0	0	3	Not Offered	–
BB 454	Programming for Bioinformatics	1	0	4	6	D Agrawal	7
BB 530	Biodesign	3	0	0	6	Not Offered	–
BB 531	Plant Biotechnology	2	0	4	8	R Patkar	11A + LX
BB 533	Animal Biotechnology	3	0	0	3	Not Offered	–
BB 535	Environmental Biotechnology	3	0	0	6	P Phale	6
BB 537	Virology	3	0	0	6	Not Offered	–
BB 539	Applied Microbiology [FH]	0	0	8	4	Not Offered	–
BB 601	Introduction to Bionanotechnology [SH]	3	0	0	3	R Srivastava	3
BB 603	Physiology for Engineers	3	0	0	6	VP Soni	10
BB 607	Proteomics Principles and Techniques	2	1	0	6	Not Offered	–
BB 617	Biophysical Chemistry	3	0	0	6	A Kumar*+SK Maji	11

BB 633	Movement neuroscience [FH]	3	0	0	3	N Kanekar	8
BB 638	Topics in Evolution #	2	1	0	6	K Kondabagil	–
BB 645	Drug Discovery and Development [FH]	3	0	0	3	Not Offered	–
BB 647	Introduction to Evolutionary Biology (FH) #	3	0	0	3	Not Offered	–
BB 648	Protein Engineering	2	1	0	6	Not Offered	–
BB 659	Applied Microbiology and Biotechnology Laboratory	0	0	8	8	P Phale	L3 + L4
BB 665	Biomaterials [FH]	3	0	0	3	Not Offered	–
BB 679	Drug Delivery [SH]	3	0	0	3	Not Offered	–
BB 706	Fundamental and Practical Aspects of Microscopy	3	0	0	6	R Mallik	7
BB 805	Experimental Techniques – II	3	0	0	6	A Kumar*+ S Srivastava+ SKaledhonkar	–
# – Students can either take BB647 OR BB638							

Semester IV

Course Code	Course Title	L	T	P	C	Instructor(s)	Slot
	Elective III [one full semester course or two half semester courses] (Department or Institute Elective)				6		

	Elective IV [one full semester course or two half semester courses] (Department or Institute Elective)				6		
BB 592	Project Stage II	0	0	0	28	SNair	–
Total number of credits: 40 **Total number of contact hours: (4-6 h theory and 0-4 h lab) per week depending upon the Elective one chooses**							

Elective III & IV

Code	Course Title	L	T	P	C	Instructor(s)	Slot
BB 400	Molecular Biophysics	2	1	0	6	PV Balaji	
BB 530	Biodesign	3	0	0	6	Not Offered	–
BB 532	Molecular Mycology	3	0	0	6	Not Offered	–
BB 534	Advanced Enzymology	3	0	0	6	Not Offered	–
BB 536	cryo-Electron Microscopy	3	0	0	6	SK	
BB 606	Cellular Electricity: Physics and Modelling	3	0	0	6	R Manchanda	
BB 611	Cell Cycle and Epigenetics	3	0	0	6	SK Ghosh	
BB 612	Cell Mechanics and Mechanobiology	3	0	0	6	S Sen	
BB 616	Cellular and Tissue Engineering	3	0	0	6	P Tayalia	
BB 623	Mechanisms of Bacterial Pathogenesis	2	1	0	6	A Banerjee	

BB 624	Microfluidics: physics and applications	3	0	0	6	D Paul	
BB 626	Modeling Biological Systems and Processes	3	0	0	6	Ranjith P	
BB 628	Molecular Cell Signalling	3	0	0	6	Not Offered	–
BB 629	Applied Immunology	3	0	0	6	Not Offered	–
BB 638	Topics in Evolution	3	0	0	6	Not Offered	–
BB 640	Biologics [SH]	3	0	0	3	Not Offered	–
BB 642	Protein Crystallography	2	1	0	6	P Bhaumik	
BB 643	NMR in Biological Systems	3	0	0	6	Not Offered	–
BB 648	Protein Engineering	2	1	0	6	SK Maji	
BB 650	Advanced Structural Biology	3	0	0	6	Not Offered	–
BB 658	Principles of Tissue Engineering [FH]	3	0	0	3	P Tayalia	
BB 670	Introduction to Biomedical Ultrasound	3	0	0	6	S Kalva	
BB 705	Fundamental Concepts in Developmental Biology	3	0	0	6	S Nair	
BB 805	Experimental Techniques – II	3	0	0	6	A Kumar*+ S Srivastava+ SKaledhonkar	–