Faculty of Science, Technology and Architecture, School of Engineering
Department of Biotechnology and Chemical Engineering

Degree: B. Tech. Computer Science and Bioscience

Total Credit: 160

	Third Semester						**Fourth Semester**				
Code	**Subject Name**	**L**	**T**	**P**	**C**	**Code**	**Subject Name**	**L**	**T**	**P**	**C**
MEE2001	Engineering Economics	3	0	0	3	**MAS2001**	Statistics & Probability	3	0	0	3
MBB21XX	Management of Technology	3	0	0	3	**CSB2201**	Object Oriented Programming Systems	3	1	0	4
CSB2101	Cell Biology and Biochemistry	3	0	3	4	**CSB2202**	Design and Analysis of Algorithms	3	1	0	4
CSB2102	Genetics and Molecular Biology	3	1	0	4	**CSB22XX**	Flexi Core- 2	3	1	0	4
CSB2103	Data Structures and Algorithms	3	1	0	4	**CSB22XX**	Program Elective 1	3	0	0	3
CSB212X	Flexi Core- 1	3	1	0	4	**XXX00XX**	Open Elective 1	3	0	0	3
CSB2131 / CSB2132	R Programming Lab/ Relational Database Management System Lab	0	0	3	1	**CSB2230**	Object Oriented Programming Systems Lab	0	0	3	1
CSE2130	Data Structures and Algorithms Lab	0	0	3	1	**CSE2231**	Design and Analysis of Algorithms Lab	0	0	3	1
CSB2170	Project-based Learning 1	0	0	2	1	**CSB2270**	Project-based Learning 2	0	0	2	1
		18	**3**	**11**	**25**			**18**	**3**	**8**	**24**
	Total Contact Hours (L+T+P)	**32**					**Total Contact Hours (L+T+P)**	**29**			

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	Fifth Semester						**Sixth Semester**				
Code	**Subject Name**	**L**	**T**	**P**	**C**	**Code**	**Subject Name**	**L**	**T**	**P**	**C**
CSB3101	Bioinformatics	3	0	2	4	**CSB3201**	Computational Biology	3	1	0	4
CSB3102	Artificial Intelligence and Machine Learning	3	1	0	4	**CSB32XX**	Program Elective 4	3	0	0	3
CSB312X	Flexi Core- 3	3	1	0	4	**CSB32XX**	Program Elective 5	3	0	0	3
CSB31XX	Program Elective 2	3	0	0	3	**CSB32XX**	Program Elective 6	3	0	0	3
CSB31XX	Program Elective 3	3	0	0	3	**XXX00XX**	Open Elective 3	3	0	0	3
XXX00XX	Open Elective 2	3	0	0	3	**CSB3202**	Professional Practice	0	0	2	1
CSB3130	Biostatics Lab	0	0	3	1	**CSB3230**	Computational Biology Lab	0	0	4	2
CSB3131	Artificial Intelligence and Machine Learning Lab	0	0	3	1						
CSB3170	Project-based Learning 3	0	0	2	1	**CSB3270**	Project-based Learning 4	0	0	6	3
		18	**2**	**10**	**24**			**15**	**1**	**12**	**22**
	Total Contact Hours (L+T+P)	**30**					**Total Contact Hours (L+T+P)**	**28**			

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	Seventh Semester						**Eighth Semester**				
Code	**Subject Name**	**L**	**T**	**P**	**C**	**Code**	**Subject Name**	**L**	**T**	**P**	**C**
CSB41XX	Program Elective 7	3	0	0	3	**CSB4270**	Major Project	0	0	24	12
CSB41XX	Program Elective 8	3	0	0	3						
XXX00XX	Open Elective 4	3	0	0	3						
XXX00XX	Open Elective 5	3	0	0	3						
CSB4170	Internship (Industry or Research)	0	0	2	1						
		12	**0**	**2**	**13**			**0**	**0**	**24**	**12**
	Total Contact Hours (L+T+P)	**14**					**Total Contact Hours (L+T+P)**	**24**			

Flexi Core

Flexi Core 1	Flexi Core 2	Flexi Core 3
CSB2120 R Programming CSE2121 Relational Database Management System	CSB2220 Genetic Engineering CSB2221 Software Engineering	CSB3120 Pharmaceutical Biotechnology CSB3121 Protein Engineering CSB3122 Bio-perl

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Program Electives			
IV	V	VI	VII
CSB2240: Structural and Sequence Analysis CSB2241: Immunodiagnostics & Vaccine Manufacturing CSB2242: Internet of things	CSB3140: "Soft Computing" CSB3141: Information System Security CSB3142: Information System Auditing, Control, and Assurance CSB3143: Advanced Internet Technologies CSB3144: Deep Learning CSB3145: Foundations of Blockchain Technology	CSB3241: Transcriptomics and Gene Expression Informatics AIM3241: Natural Language Processing AIM3243: Artificial Intelligence in Cyber Security CSB3242: Computer Vision in Biomedicine AIM3244: Explainable AI AIM3245: Generative AI	Example - PE 7 CSB4140: Python Programming for Biosciences CSB4141: Legal and Ethical Aspects of Health Informatics CSB4142: Genomics and Proteomics CSB4143: AI and Systems Biology in Precision Medicine

****Students with CGPA more than or equal to 8.5 in second year are eligible for acquiring Honors degree by attaining additional 18 credits (160+ 18= 178 credits) as per the following scheme:**

Semester	Course code	Name	L-T-P-C
V	CSB3180	Research Methodology	1-0-0-1
VI	CSB3280	Structural Biology	3-0-0-3
VII	CSB4180	Genome Editing and Engineering	3-0-0-3
VII	CSB4181	Introduction to Proteogenomics	3-0-0-3
VIII	CSB4280	Honors Project	0-0-16-8