Faculty of Engineering, School of Civil, Biotechnology and Chemical Engineering
Department of Biotechnology and Chemical Engineering
Degree: B. Tech. Computer Science and Biosciences 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	**CSE22XX**	Object Oriented Programming Systems	3	1	0	4
CSB2101	Cell Biology and Biochemistry	3	0	3	4	**CSE22XX**	Design and Analysis of Algorithms	3	1	0	4
CSB2102	Genetics and Molecular Biology	3	1	0	4	**XXX22XX**	Flexi Core- 2	3	1	0	4
CSE21XX	Data Structures and Algorithms	3	1	0	4	**CSB224X / CSE224X**	Program Elective 1	3	0	0	3
XXX21XX	Flexi Core- 1	3	1	0	4	**XXX00XX**	Open Elective 1	3	0	0	3
CSE213X / CSB2131	Relational Database Management System Lab/ R Programming Lab	0	0	3	1	**CSE223X**	Object Oriented Programming Systems Lab	0	0	3	1
CSE213X	Data Structures and Algorithms Lab	0	0	3	1	**CSE223X**	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**			
	Fifth Semester						**Sixth Semester**				
Code	**Subject Name**	**L**	**T**	**P**	**C**	**Code**	**Subject Name**	**L**	**T**	**P**	**C**
CSB3101	Bioinformatics	3	1	0	4	**CSB3201**	Computational Biology	3	1	0	4
CSE31XX	Artificial Intelligence and Machine Learning	3	1	0	4	**CSB324X / CSE324X**	Program Elective 4	3	0	0	3
XXX31XX	Flexi Core- 3	3	1	0	4	**CSB324X / CSE324X**	Program Elective 5	3	0	0	3
CSB314X / CSE314X	Program Elective 2	3	0	0	3	**CSB324X/ CSE324X**	Program Elective 6	3	0	0	3
CSB314X / CSE314X	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
CSB3131	Bioinformatics Lab	0	0	3	1	**CSB3231**	Computational Biology Lab	0	0	4	2
CSE313X	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	3	8	24			15	1	12	22

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	Total Contact Hours (L+T+P)	29					Total Contact Hours (L+T+P)	28			
	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
CSE21XX Relational Database Management System CSB2120 R Programming	CSE22XX Software Engineering CSB2220 Systems Biology	CSB3120 Genomics and Proteomics CSE31XX Big Data Analytics

Program Electives			
IV	V	VI	VII
Example - PE1 • CSE22XX: Internet of things • CSB2240: Enzyme Technology	Example - PE2 • CSE31XX: Data Visualization Techniques • CSE31XX: Android App Development Example - PE3 • CSB3140: Analytical Techniques in Biotechnology • CSE31XX: Advanced Java	Example - PE 4 • CSE32XX: Advanced Data Structures • CSB3240: Principals of Synthetic Biotechnology Example - PE5 • CSE32XX: Graph Theory and Applications • CSB3241: Stem Cell Technology Example - PE6 • CSB3242: Tissue Engineering	Example - PE 7 • CSB4140: Recombinant DNA Technology • CSB4141: Drug Discovery Example - PE8 • CSB4142: Genomics and Proteomics • CSE41XX: Virtual and Augmented Reality

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		• CSE32XX: Software Testing and Automation	

Open Electives

Graded OE	Non-Graded OE
OE1 CSB0001: Introduction to Materials Science and Engineering OE2 CSB0001: Renewable energy and sustainable engineering OE3 CSB0001: Introduction to Food Engineering OE4 CSB0001: Introduction to Business Analytics and Data Science OE5 CSB0001: Machine learning for life sciences	OE1 CSB0051: Course Name OE2 CSB0052: Course Name OE3 CSB0052: Course Name OE4 CSB0052: Course Name OE5 CSB0052: Course Name

****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:**

Program Electives for Hons.		
Subject name	**Semester**	**Credits**
BIT3180*: Research Methodology	Semester V	1
BIT3280: Genome Editing and Engineering	Semester VI	3
BIT4180: Computational Genomics	Semester VII	3
BIT4181: Synthetic Biology	Semester VII	3
BIT4280*: Honors Project	Semester VIII	8