

Department of Computer Science and Business  
System

Curriculum Structure

1<sup>st</sup> Semester to 8<sup>th</sup> Semester

(Effective from 2021-22 Admission Batch)

# Curriculum for B. Tech under Autonomy Computer Science & Business Systems

L – Lecture; T- Tutorial; P- Practical [1L=1Cr, 1T=1Cr, 1P =0.5 Cr]

\*\* MOOCS COURSES for HONOURS/MINOR Degree are Program specific and to be taken from MOOCS BASKET

1 <sup>ST</sup> Year 1 <sup>st</sup> Semester: 1 <sup>st</sup> Semester								
Sl. No.	Category	Course Code	Course Title	Hours per week				Credits
				L	T	P	Total	
A. THEORY								
1	Basic Science course	M(BS)101	Discrete Mathematics	3	0	0	3	3
2	Basic Science course	M(BS)102	Introductory Topics in Statistics, Probability and Calculus	3	0	0	3	3
3	Engineering Science Courses	CB101	Fundamentals of Computer Science	3	0	0	3	3
4	Engineering Science Courses	EE(BS)101	Principles of Electrical Engineering	2	0	0	2	2
5	Basic Science course	PH(BS)101	Physics for Computing Science	2	0	0	2	2
6	Humanities and Social Sciences	HU(BS)101	Business Communication and Value Science-I	2	0	0	2	2
B. PRACTICAL								
7	Engineering Science Courses	CB191	Fundamentals of Computer Science Lab	0	0	3	3	1.5
8	Engineering Science Courses	EE(BS)191	Principles of Electrical Engineering Lab	0	0	2	2	1
9	Basic Science course	PH(BS)191	Physics for Computing Science Lab	0	0	2	2	1
TOTAL CREDIT								18.5

1 <sup>ST</sup> Year 2 <sup>nd</sup> Semester: 2nd Semester							
Sl. No.	Category	Course Code	Course Title	Hours per week			Credits
				L	T	P	
A. THEORY							
1	Basic Science courses	M(BS)201	Linear Algebra	3	0	0	3
2	Basic Science courses	M(BS)202	Statistical Methods	3	0	0	3
3	Engineering Science Courses	CB201	Data Structures and Algorithms	3	1	0	4
4	Engineering Science Courses	EC(BS)201	Principles of Electronics	2	0	0	2
5	Basic Science courses	BS201	Fundamentals of Economics	2	0	0	2
6	Humanities and Social Sciences	HU(BS)201	Business Communication and Value Science - II	2	0	0	2
7	Basic Science courses	MC(BS)201	Environmental Sciences (Non-Credit)	3	0	0	3
B. PRACTICAL							
8	Basic Science course	M(BS)292	Statistical Methods Lab	0	0	2	2
9	Engineering Science Courses	CB291	Data Structures and Algorithms Lab	0	0	3	3
10	Engineering Science Courses	EC(BS)291	Principles of Electronics Lab	0	0	2	2
TOTAL CREDIT							19.5

Collective Data from 3rd to 6th Semester (Summer/Winter Training during Semester Break & Internship should be done after 5th Semester or 6th Semester). All related certificates to be collected by the training/internship coordinator(s).

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## 2nd Year 1st Semester: 3rd Semester

Sl. No.	Category	Course Code	Course Title	Hours per week				Credits
				L	T	P	Total	
<b>A. THEORY</b>								
1	Basic Science course	CB301	Formal Language and Automata Theory	3	0	0	3	3
2	Engineering Science Courses	CB302	Computer Organization and Architecture	3	0	0	3	3
3	Engineering Science Courses	CB303	Object Oriented Programming	3	0	0	3	3
4	Program Core Course	CB304	Computational Statistics	3	0	0	3	3
5	Program Core Course	CB305	Software Engineering	3	0	0	3	3
6	Humanities and Social Sciences including Management courses	MC(BS)301	Indian Constitution (Non-Credit)	3	0	0	3	-
<b>B. PRACTICAL</b>								
7	Engineering Science Courses	CB391	Computer Organization and Architecture Lab	0	0	3	3	1.5
8	Engineering Science Courses	CB393	Object Oriented Programming Lab	0	0	3	3	1.5
9	Program Core Course	CB394	Computational Statistics Lab	0	0	2	2	1
10	Program Core Course	CB395	Software Engineering Lab	0	0	2	2	1
<b>TOTAL CREDIT</b>								<b>20</b>

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## 2nd Year 2<sup>nd</sup> Semester: 4<sup>th</sup> Semester

S l · N	Category	Course Code	Course Title	Hours per week				Cr edi ts
				L	T	P	T o t a l	
<b>A. THEORY</b>								
1	Program Core Course	CB401	Operating Systems (Unix)	3	0	0	3	3
2	Program Core Course	CB402	Database Management Systems	3	0	0	3	3
3	Program Core Course	CB403	Software Design with UML	3	0	0	3	3
4	Program Core Course	BS401	Introduction to Innovation, IP Management and Entrepreneurship	3	0	0	3	3
5	Humanities and Social Sciences including Management courses	BS402	Business Communication and Value Science-III	2	0	0	2	2
6	Basic Science course	M(BS)401	Operations Research	2	0	0	2	2
7	Humanities and Social Sciences including Management courses	MC(BS)401	Essen Essence of Indian Traditional Knowledge (Non-Credit)					
<b>B. PRACTICAL</b>								
8	Program Core Course	CB491	Operating Systems Lab (Unix)	0	0	2	2	1
9	Program Core Course	CB492	Database Management Systems Lab	0	0	2	2	1
10	Program Core Course	CB493	Software Design with UML Lab	0	0	2	2	1
11	Engineering Science Courses	M(BS)491	Operations Research Lab	0	0	2	2	1
<b>TOTAL CREDIT</b>								20

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3 <sup>rd</sup> Year 1 <sup>st</sup> Semester: 5 <sup>th</sup> Semester									
Sl No.	Category	Course Code	Course Title	Hours per week				Credits	
				L	T	P	Total		
<b>A. THEORY</b>									
1	Program Course	Core	CB501	Design and Analysis of Algorithms	3	0	0	3	3
2	Program Course	Core	CB502	Compiler Design (LEX & YACC)	3	0	0	3	3
3	Program Course	Core	BS501	Fundamentals of Management	2	0	0	2	2
4	Program Course	Core	BS502	Business Strategy	2	0	0	2	2
5	Program Course	Core	BS503	Design Thinking	2	1	0	3	3
6	Professional Elective courses	PE-CB503A	Conversational Systems	2	0	0	2	2	
		PE-CB503B	Cloud, Microservices and Application						
		PE-CB503C	Machine Learning						
<b>B. PRACTICAL</b>									
7	Program Course	Core	CB591	Design and Analysis of Algorithms Lab	0	0	3	3	1.5
8	Program Course	Core	CB592	Compiler Design Lab (LEX & YACC)	0	0	3	3	1.5
9	Program Course	Core	BS593	Design Thinking Lab	0	0	2	2	1
10	Professional Elective courses	PE-CB593A	Conversational Systems Lab	0	0	2	2	1	
		PE-CB593B	Cloud, Microservices and Application Lab						
		PE-CB593C	Machine Learning Lab						
11	PROJECT		PR(BS)591	Minor Project I	0	0	2	2	1
<b>TOTAL CREDIT</b>								<b>21</b>	

Collective Data from 3<sup>rd</sup> to 6<sup>th</sup> Semester (Summer/Winter Training during Semester Break & Internship should be done after 5<sup>th</sup> Semester or 6<sup>th</sup> Semester). All related certificates to be collected by the training/ internship coordinator(s).

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### 3<sup>rd</sup> Year 2<sup>nd</sup> Semester: 6<sup>th</sup> Semester

Sl. No.	Category	Course Code	Course Title	Hours per week				Credits
				L	T	P	Total	
<b>A. THEORY</b>								
1	Program Core Course	CB601	Computer Networks	3	0	0	3	3
2	Program Core Course	CB602	Information Security	3	0	0	3	3
3	Program Core Course	CB603	Artificial Intelligence	3	0	0	3	3
4	Humanities and Social Sciences including Management courses	BS601	Financial and Cost Accounting	2	1	0	3	3
5	Humanities and Social Sciences including Management courses	HU(BS) 601	Business Communication and Value Science-IV	2	0	0	2	2
6	Professional Elective courses	PE-CB603A	Robotics and Embedded Systems	2	0	0	2	2
		PE-CB603B	Modern Web Applications					
		PE-CB603C	Data Mining and Analytics					
<b>B. PRACTICAL</b>								
7	Program Core Course	CB691	Computer Networks Lab	0	0	3	3	1.5
8	Program Core Course	CB692	Information Security Lab	0	0	2	2	1
9	Program Core Course	CB693	Artificial Intelligence Lab	0	0	3	3	1.5
10	Professional Elective courses	PE-CB693A	Robotics and Embedded Systems Lab	0	0	0	2	1
		PE-CB693B	Modern Web Applications Lab					
		PE-CB693B	Data Mining and Analytics Lab					
<b>TOTAL CREDIT</b>								<b>21</b>

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## 4<sup>th</sup> Year 1<sup>st</sup> Semester: 7<sup>th</sup> Semester

Sl No	Course Code	Paper Code	Theory	Contact Hours /Week				Credit Points
				L	T	P	Total	
<b>A. THEORY</b>								
1	Professional Elective courses	CB701	Usability Design of Software Applications	2	0	0	2	2
2	Professional Elective courses	CB702	IT Workshop Skylab / Matlab	2	0	0	2	2
3	Professional Elective courses	BS701	Financial Management	3	0	0	3	3
4	Humanities and Social Sciences	BS702	Human Resource Management	2	0	0	2	2
5	Professional Elective courses	PE-CB703A	Cognitive Science and Analytics	2	1	0	3	3
		PE-CB703B	Introduction to IoT					
		PE-CB703C	Cryptology					
6	Professional Elective courses	PE-CB704A	Quantum Computation and Quantum Information	2	1	0	3	3
		PE-CB704B	Advanced Social, Text and Media Analytics					
		PE-CB704C	Mobile Computing					
<b>B. PRACTICAL</b>								
7	Professional Elective courses	CB791	Usability Design of Software Applications Lab	0	0	2	2	1
8	Professional Elective courses	CB792	IT Workshop Skylab / Matlab Lab	0	0	2	2	1
9	Professional Elective courses	PE-CB793A	Cognitive Science and Analytics Lab	0	0	2	2	1
		PE-CB793B	Introduction to IoT Lab					
		PE-CB793C	Cryptology Lab					
10	Professional Elective courses	PE-CB794A	Quantum Computation and Quantum Information Lab	0	0	2	2	1
		PE-CB794B	Advanced Social, Text and Media Analytics Lab					
		PE-CB794C	Mobile Computing Lab					
11	PROJECT	CB781	Project Evaluation I	0	0	4	4	2

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## 4<sup>th</sup> Year 2<sup>nd</sup> Semester: 8<sup>th</sup> Semester

Sl No	Course Code	Paper Code	Theory	Contact Hours /Week				Credit Points
				L	T	P	Total	
<b>A. THEORY</b>								
1	Professional Elective courses	BS801	Services Science and Service Operational Management	3	0	0	3	3
2	Professional Elective courses	BS802	IT Project Management	2	0	0	2	2
3	Professional Elective courses	BS803	Marketing Research and Marketing Management	2	0	0	2	2
4	Open Elective courses	PE-CBS804A	Behavioral Economics	3	0	0	3	3
		PE-CBS804B	Computational Finance and Modeling					
		PE-CBS804C	Psychology					
		PE-CBS804D	Enterprise Systems					
5	Open Elective courses	PE-BS805A	Advance Finance	3	0	0	3	3
		PE-BS805B	Image Processing and Pattern Recognition					
<b>B. PRACTICAL</b>								
6	Professional Elective courses	BS891	Services Science and Service Operational Management Lab	0	0	0	2	1
7	Professional Elective courses	BS892	IT Project Management Lab	0	0	0	2	1
8	Open Elective courses	PE-BS894A	Behavioral Economics Lab	0	0	2	2	1
		PE-BS894B	Computational Finance and Modeling Lab					
		PE-BS894C	Psychology Lab					
		PE-BS894D	Enterprise Systems Lab					
9	Open Elective courses	PE-CS895A	Advance Finance Lab	0	0	2	2	1
		PE-CS895B	Image Processing and Pattern Recognition Lab					
10	Project	BS881	Project Evaluation II	0	0	12	2	6
<b>TOTAL CREDIT</b>								<b>23</b>