

B Tech in Computer Science and Business Systems

Dept. of Information Technology,
Manipal Institute of Technology, Bengaluru-560 064
Manipal Academy of Higher Education (MAHE)

B Tech Curriculum – 2024

Flexible Total Credits: 160/168/180/188 Mandatory

ACADEMIC YEAR	NO. OF CREDITS	REMARKS
FIRST	20 + 20 = 40	Universal Human Values & professional ethics- No credit Human Rights and Constitution - No credit
SECOND	20 + 22 = 42	Creativity, Problem Solving & Innovation- No credit Environmental Studies- No credit
THIRD	22 + 23 = 45	ODD SEM: PEs EVEN SEM: PEs
FOURTH	20 + 13 = 33	ODD SEM: PEs EVEN SEM: Project Work/Practice School, Industrial Training

FIRST YEAR B Tech CURRICULUM 2024

Year	FIRST SEMESTER					SECOND SEMESTER						
	Sub. Code	Subject Name	L	T	P	C	Sub. Code	Subject Name	L	T	P	C
I	CBS_1101	Discrete Mathematics	3	1	0	4	CBS_1201	Linear Algebra	3	1	0	4
	CBS_1102	Statistics, Probability and Calculus	3	0	0	3	CBS_1202	Statistical Methods	2	1	0	3
	CBS_1103	Fundamentals of Computer Science	3	0	0	3	CBS_1203	Data Structures & Algorithms	3	0	0	3
	CBS_1104	Principles of Electrical Engineering	3	0	0	3	CBS_1204	Principles of Electronics	3	0	0	3
	CBS_1105	Fundamentals of Physics	2	0	0	2	CBS_1205	Fundamentals of Economics	2	0	0	2
	CBS_1106	Business Communication & Value Science - I	2	0	0	2	CBS_1206	Business Communication & Value Science – II	2	0	0	2
	CBS_1107	Fundamentals of Computer Science Lab	0	0	2	1	CBS_1207	Statistical Methods Lab	0	0	2	1
	CBS_1108	Principles of Electrical Engineering Lab	0	0	2	1	CBS_1208	Data Structures & Algorithms Lab	0	0	2	1
	CBS_1109	Fundamentals of Physics Lab	0	0	2	1	CBS_1209	Principles of Electronics Lab	0	0	2	1
	IPE 1071	Universal Human Values and Professional Ethics	1	0	0	0	HUM 1072	Human Rights and Constitution	1	0	0	0
		17	1	6	20			16	2	6	20	
	Total Contact Hours (L + T + P)		24			Total Contact Hours (L + T + P)		24				

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Year	THIRD SEMESTER						FOURTH SEMESTER										
	Sub. Code	Subject Name	L	T	P	C	Sub. Code	Subject Name	L	T	P	C					
II	CBS_2101	Formal Language and Automata Theory	3	1	0	4	CBS_2201	Operating Systems	3	0	0	3					
	CBS_2102	Computer Organization & Architecture	3	0	0	3	CBS_2202	Database Management system	3	0	0	3					
	CBS_2103	Object Oriented Programming	3	0	0	3	CBS_2203	Software Design with UML	3	0	0	3					
	CBS_2104	Computational Statistics	3	0	0	3	CBS_2204	Introduction to Innovation, IP Management & Entrepreneurship	3	0	0	3					
	CBS_2105	Software Engineering	3	0	0	3	CBS_2205	Business Communication & Value Science – III	2	0	0	2					
	CBS_2106	Computer Organization & Architecture Lab	0	0	2	1	CBS_2206	Operations Research	3	0	0	3					
	CBS_2107	Object-Oriented Programming Lab	0	0	2	1	CBS_2207	Marketing Research & Marketing Management	2	0	0	2					
	CBS_2108	Computational Statistics Lab	0	0	2	1	CBS_2208	Operating Systems Lab (Unix)	0	0	2	1					
	CBS_2109	Software Engineering Lab	0	0	2	1	CBS_2209	Database Management system Lab	0	0	2	1					
	IPE****	Creativity, Problem Solving & Innovation	1	0	0	0	CBS_2210	Software Design with UML Lab	0	0	2	1					
						CBS_2211	Environmental Studies	2	0	0	0						
								16	1	8	20			21	0	6	22
	Total Contact Hours (L + T + P)		25			Total Contact Hours (L + T + P)			27								

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Year	FIFTH SEMESTER					SIXTH SEMESTER						
	Sub. Code	Subject Name	L	T	P	C	Sub. Code	Subject Name	L	T	P	C
II I	CBS_3101	Design And Analysis of Algorithms	3	0	0	3	CBS_3201	Computer Networks	3	0	0	3
	CBS_3102	Machine Learning	3	0	0	3	CBS_3202	Information Security	3	0	0	3
	CBS_3103	Fundamentals of Management	2	0	0	2	CBS_3203	Artificial Intelligence	3	0	0	3
	CBS_3104	Cloud, Microservices & Application	3	0	0	3	CBS_3204	Financial & Cost Accounting	2	0	0	2
	CBS_3105	Design Thinking	2	0	0	2	CBS_3205	Business Communication & Value Science – IV	2	0	0	2
	CBS_3106	Design And Analysis of Algorithms Lab	0	0	2	1	CBS_3206	Computer Networks Lab	0	0	4	2
	CBS_3107	Machine Learning Lab	0	0	2	1	CBS_3207	Information Security Lab	0	0	2	1
	CBS_****	Elective II	3	0	0	3	CBS_3208	Artificial Intelligence Lab	0	0	2	1
	CBS_****	Elective I	3	0	0	3	CBS_****	Elective IV	3	0	0	3
	CBS_3108	Mini Project	0	0	2	1	CBS_****	Elective III	3	0	0	3
			19	0	6	22			19	0	8	23
	Total Contact Hours (L + T + P)		25				Total Contact Hours (L + T + P)		27			

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Year	SEVENTH SEMESTER					EIGHTH SEMESTER						
	Sub. Code	Subject Name	L	T	P	C	Sub. Code	Subject Name	L	T	P	C
IV	CBS_4101	Usability Design of Software Applications	3	0	0	3	CBS_4201	Industrial Training (MLC)				1
	CBS_4102	IT Workshop Skylab / Matlab	3	0	0	3	CBS_4202	Project Work				12
	CBS_****	Elective V	3	0	0	3		Project Work (B Tech – honours) *(V - VIII sem)				20
	CBS_****	Elective VI	3	0	0	3		B Tech – honours Theory – 1* (V semester)				4
	CBS_4103	Data Visualisation	3	0	0	3		B Tech – honours Theory – 2* (VI semester)				4
	CBS_4104	IT Project Management	3	0	0	3		B Tech – honours Theory – 3* (VII semester)				4
	CBS_4105	IT Workshop Skylab / Matlab Lab	0	0	2	1						
	CBS_4106	IT Project Management Lab	0	0	2	1						
				18	0	4	20/26***					
	Total Contact Hours (L + T + P)		22				Total Contact Hours (L + T + P)					

*Applicable to eligible students who opted for and successfully completed the B Tech – honours requirements

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<p>Minor Specializations</p> <p>I. Data Analytics CBS_4001 Business Intelligence and Analytics CBS_4002 Information Retrieval CBS_4003 Text Analytics CBS_4004 Semantic web</p> <p>II. Computer Graphics and Visualization CBS_4005: Augmented and Virtual Reality CBS_4006: Computer Graphics CBS_4007: Computer Vision CBS_4008: Digital Image Processing</p> <p>III. Advanced Security Systems CBS_4009: Advanced Cryptography CBS_4010: Distributed Cloud Security CBS_4011 :Cyber Law and Ethics CBS_4012: AI in Cyber Security</p>	<p>Other Programme Electives</p> <p>Year 3 Semester 5</p> <p>Elective I CBS_4013: Conversational Systems CBS_4014: Business Strategy CBS_4015: Compiler Design</p> <p>Elective II CBS_4016: Behavioral Economics CBS_4017: Computational Finance & Modeling CBS_4018: Psychology</p> <p>Semester 6</p> <p>Elective III CBS_4019: Robotics and Embedded Systems CBS_4020: Modern Web Applications CBS_4021: Data Mining and Analytics</p> <p>Elective IV CBS_4022: Enterprise System CBS_4023: Natural Language Processing CBS_4024: Advance Finance CBS_4025: Image Processing and Pattern Recognition</p> <p>Year 4</p> <p>Semester 7</p> <p>Elective V CBS_4026: Cognitive Science & Analytics CBS_4027: Introduction to IoT CBS_4028: Generative AI CBS_4029: Cryptology</p> <p>Elective VI CBS_4030: Quantum Computation & Quantum Information CBS_4031: Information Retrieval CBS_4032: Advanced Social, Text and Media Analytics CBS_4033: Mobile Computing</p>	<p>Note: B. Tech Honors students must take 3 additional theory courses of 12 credits and an additional research project of 8 credits to accumulate 20 credits.</p> <p>The additional theory courses: CBS_4034: Advanced Machine Learning CBS_4035: Pattern Classification CBS_4036: Advanced Cryptography</p>
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