B Tech in Computer Science and Engineering (Cyber Security)
Dept. of Information Technology,
Manipal Institute of Technology, Bengaluru-560 064
Manipal Academy of Higher Education (MAHE)

B Tech Curriculum – 2022

Flexible Total Credits: 160/168/180/188
Mandatory Learning Courses (MLC): 12 Credits (2+9+1)
Flexible Core - Choice Based Credit System (CBCS)
Provisions for awarding credits to students for their performance in NCC and
Major Projects (optional) - OEs
Scope for Component level Self Directed Learning (SDL) in a few courses

ACADEMIC YEAR	NO. OF CREDITS	REMARKS
FIRST	22 + 22 = 44	EG-I & EG-II – 1 credit each Universal Human Values & professional ethics– 1 credit Human Rights and Constitution – 1 credit
SECOND	22 + 21 = 43	ODD SEM: Core + Labs EVEN SEM: Core + Labs
THIRD	21 + 21 = 42	ODD SEM: FLEXIBLE Core + Labs + OE EVEN SEM: FLEXIBLE Core + OE + PEs + Labs CHOICE BASED CREDIT SYSTEM FOR CORE COURSES MANDATORY OE – CPI
FOURTH	18 + 13 = 31	ODD SEM: PEs + OE EVEN SEM: Project Work/Practice School, Industrial Training

B Tech in Computer Science and Engineering (Cyber Security)

Year	Sub. Code	Subject Name	L	T	P	C	Sub. Code	Subject Name	L	T	P	C
	THIRD SEMESTER						**FOURTH SEMESTER**					
II	MAT 2126	Engineering Mathematics - III	2	1	0	3	MAT_ 2256	Engineering mathematics - IV	2	1	0	3
	IT_ 2151	Computer Organization & Architecture	3	1	0	4	IT_ 2251	Formal Languages and Automata Theory	2	1	0	3
	IT_ 2152	Data Structures	3	1	0	4	IT_ 2252	Design and Analysis of Algorithms	3	1	0	4
	IT_ 2157	Digital System Design	3	1	0	4	IT_2253	Embedded Systems	3	1	0	4
	IT_ 2158	Object Oriented Programming	3	1	0	4	IT_ 2254	Database Systems	3	1	0	4
	IT_ 2161	Data Structures Lab	0	0	3	1	IT_ 2261	Database Systems Lab	0	0	3	1
	IT_ 2165	Digital System DesignLab	0	0	3	1	IT_ 2262	Algorithms Lab	0	0	3	1
	IT_ 2166	Object Oriented Programming Lab	0	0	3	1	IT_ 2266	Embedded Systems Lab	0	0	3	1
			14	**5**	**9**	**22**			**13**	**5**	**9**	**21**
	Total Contact Hours (L + T + P)		**28**				**Total Contact Hours (L + T + P)**		**27**			

B Tech in Computer Science and Engineering (Cyber Security)

Year	Sub. Code	Subject Name	L	T	P	C	Sub. Code	Subject Name	L	T	P	C
	FIFTH SEMESTER						**SIXTH SEMESTER**					
II I	HUM_3052	Essentials of Management	3	0	0	3	HUM_3051	Engineering Economicsand Financial Management	3	0	0	3
	IT_3151	Number Theory and Cryptography	2	1	0	3	IT_3251	Applied Cryptography	2	1	0	3
	IT_3152	Computer Networks	2	1	0	3	IT_3252	Cyber Security	2	1	0	3
	IT_3153	Operating Systems	2	1	0	3	IT ****	PE – 1 / Minor Specialization	3	0	0	3
	IT_3154	Digital Forensics	2	1	0	3	IT ****	PE – 2 / Minor Specialization	3	0	0	3
	** ****	OE – Creativity, ProblemSolving and Innovation** (MLC) - mandatory	3	0	0	3	** ****	OE – 1** (MLC)	3	0	0	3
	IT_3161	Number Theory and Cryptography Lab	0	0	3	1	IT_3261	Applied Cryptography-Lab	0	0	3	1
	IT_3166	Operating Systems Lab	0	0	3	1	IT_3262	Cyber Security andForensics Lab	0	0	3	1
	IT_3162	Computer Networks Lab	0	0	3	1	IT_3263	Web Programming Lab	0	0	3	1
			14	**4**	**9**	**21**			**16**	**2**	**9**	**21**
	Total Contact Hours (L + T + P)		**27**				**Total Contact Hours (L + T + P)**		**27**			

** Performance of students to be recorded in Eighth semester grade sheet.

B Tech in Computer Science and Engineering (Cyber Security)

Year	Sub. Code	Subject Name	L	T	P	C	Sub. Code	Subject Name	L	T	P	C
		SEVENTH SEMESTER						**EIGHTH SEMESTER**				
IV		PE – 3 / Minor Specialization	3	0	0	3	IT_4291	Industrial Training(MLC)				1
		PE – 4 / Minor Specialization	3	0	0	3	IT_4292	Project Work				12
		PE – 5	3	0	0	3	IT_4293	Project Work (B Tech – honours) * (V - VIII sem)				20
		PE – 6	3	0	0	3		B Tech – honoursTheory – 1* (V semester)				4
		PE - 7	3	0	0	3		B Tech – honoursTheory – 2* (VI semester)				4
		OE – 2** (MLC)	3	0	0	3		B Tech – honoursTheory – 3* (VII semester)				4
		Mini Project (Minor specialization) ***				8						
			18	**0**	**0**	**18/26*****						**13/33***
	Total Contact Hours (L + T + P)		**18**				**Total Contact Hours (L + T + P)**					

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

** Performance of students to be recorded in Eighth semester grade sheet.

***Applicable to students who opted for minor specialization

Minor Specializations	Other Programme Electives	Open Electives
I. Advanced Security Systems IT_4001 Cryptography & Network Security IT_4002 Distributed Cloud Security IT_4003 Cyber Law and Ethics IT_4004 AI in Cyber Security **II.** Internet of Things IT_4005 Introduction to IoT IT_4006 IoT in Agriculture IT_4007 IoT for Healthcare IT_4008 Smart Cities **III. Entrepreneurship** HUM_4051 Financial Management HUM_4062 Entrepreneurship HUM_4060 Design Thinking HUM_4061 Intellectual Property Management **IV Fintech** HUM_4057 Financial Economics HUM_4051 Financial Management HUM_4059 Fintech Services HUM_4058Technologies for Services **Coursera Courses-** IT_4017 Big Data Modelling and Management Systems IT_4018 Big Data Integration and Processing IT_4019 Machine Learning with Big Data IT_4020 Graph Analytics for Big Data	IT_4021 Cryptanalysis IT_4022 Block chain technology IT_4023 Mobile security and privacy IT_4024 Ethical hacking and cyber security IT_4025 Information retrieval IT_4026 Wireless networks IT_4027 Software defined networks IT_4028 Hardware security IT_4029 Quantum computing IT_4030 AI in cybersecurity IT_4057 Network security IT_4058 Cyber forensics IT_4059 Artificial intelligence in cyber security IT_4060 Database and application security IT_4061 Software engineering IT_4061 Distributed systems IT_4063 Advanced computer networks IT_4064 Android application development IT_4065 Data warehousing and advanced data mining IT_4066 Deep learning IT_4067 Cognitive systems IT_4068 Robotics and intelligent systems IT_4069 Parallel computer architecture and programming IT_4070 Object-oriented system design	IT_4071 Essentials of Industrial Computing IT_4072 Essentials of IT IT_4073 Linux Programming IT_4074 Principles of Database Systems IT_4075 Principles of Software Engineering IT_4076 Python Programming IT_4077 Web Programming Note: B. Tech Honors students must take 3 additional theory courses of 12 credits and an additional research project of 8 credits so as to accumulate 20 credits. The additional theory courses: IT_5012 Advanced Machine Learning IT_5006 Pattern Recognition IT_5171 Advanced Cryptography