VIT BHOPAL UNIVERSITY, BHOPAL

SCHOOL OF COMPUTING SCIENCE AND ENGINEERING

CURRICULUM VER. 1.0

Integrated Five Years M.Tech. (Computer Science and Engineering) Specialization in Cyber Security

(2020-21 Batch onwards)

Category	Core Credits	Elective Credits	Total Credits
Natural Science	28	6	**34**
Engineering and Technology	131	24	**155**
Humanities and Management	13	9	**22**
Open Electives	0	9	**9**
Total Credits			**220**

CODE	ENGINEERING AND TECHNOLOGY – CORE SUBJECTS	TYPE	CREDITS
CSE1001	Introduction to problem solving and programming	LTP	4
CSE2001	Object oriented programming with C++	LTP	4
CSE2003	Computer architecture and organization	LT	4
CSE2004	Theory of computation and compiler design	LT	4
CSE3001	Database management systems	LTP	4
CSE3003	Operating systems	LTP	4
CSE3006	Computer Networks	LTP	4
CSE4001	Internet and web programming	LTP	4
ECE2002	Digital logic design	LTP	4
ECE3004	Microprocessors and Microcontrollers	LTP	4
EEE1001	Electric Circuits and Systems	LTP	4
CSD1001	Principles of Digital Forensics	LT	3
CSD2097	Internship	PJ	2
CSD3001	Data Structures and Analysis of Algorithms	LP	3
CSD3002	Secure Software Engineering	LTP	4
CSD4001	Software Vulnerability Testing	LTP	4
CSD4002	Ethical Hacking	LTP	4
CSD4003	Network and System Security	LP	3
CSD4004	Cyber Clinic	P	2
CSD4098	Comprehensive Exam	---	2
CSD5002	Virtualization Essentials	LP	3
CSD5003	Database Security	LP	3
CSD5005	Network Analysis, Architecture and Design	LTP	4
CSD5009	Cyber Physical Systems	LTP	4
DSN2096	Engineering design	LT	2
DSN2098	Project Exhibition – I	PJ	1
DSN2099	Project Exhibition – II	PJ	1
DSN3099	Engineering Project in Community Service	PJ	2
CSD5198	Project – I	PJ	20
CSD5199	Project – II	PJ	20
		TOTAL	131

CODE	ENGINEERING AND TECHNOLOGY – PROGRAM ELECTIVE SUBJECTS	TYPE	CREDITS
CSD2001	Mobile Device Forensics	LP	3
CSD3004	Cyber Threat Analysis	LP	3
CSD3005	Data Privacy	LP	3
CSD3006	Android Security	LP	3
CSD3007	Block chains and Crypto currencies	LT	3
CSD3008	Machine Learning Forensics	LT	3
CSD4005	Network Forensics	LP	3
CSD4006	File System Forensics	LP	3
CSD4007	Cloud Security	LT	3
CSD4008	Cyber Security Framework	LT	3
CSD4009	Enterprise Cyber Security	LT	3
CSD4010	Embedded Systems and Security	LP	3
CSD4011	IoT Security	LT	3
CSD4012	Web Security	LP	3
CSD4013	Forensic Audio and Video Analysis	LP	3
CSD6001	Network Defense and Countermeasures	LT	3
CSD6002	Virtualization Security	LT	3
CSD6003	Mobile Forensics	LP	3
CSD6004	Malware Analysis	LP	3
CSD6005	Wireless and Mobile Security	LT	3
CSD6006	Web Application Security	LP	3
CSD6008	File Systems Forensics Analysis	LP	3
CSD6009	Social Network Forensics	LT	3
CSD6010	Penetration Testing	LP	3
CSD6011	Machine Learning in Cyber Security	LT	3
CSD6012	Mobile Application Security	LP	3
CSD6013	Multimedia Forensics	LT	3
CSD6014	Big Data Forensics	LT	3
CSD6015	Digital Evidence Management	LT	3
CSD6016	Cyber Crimes and Fraud Management	LT	3
CSD6017	Forensic Accounting and Auditing	LT	3
	Select Any Eight	**Total**	**24**

CODE	NATURAL SCIENCES	TYPE	CREDITS
PHY1001	Engineering Physics	LTP	4
CHY1003	Forensic chemistry	LT	3
MAT1001	Calculus and Laplace Transforms	LT	4
MAT2001	Differential and Difference Equations	LT	3
MAT3002	Applied Linear Algebra	LT	3
MAT2009	Applied Cryptography	LT	4
MAT2002	Discrete Mathematics and Graph theory	LT	4
CHY1002	Environmental Science	LT	3
		TOTAL	28
CODE	NATURAL SCIENCE ELECTIVES	TYPE	CREDITS
BIO3021	Forensic Biology	LT	3
PHY2004	Forensic Physics	LT	3
MAT2003	Applied Numerical Methods	LT	3
MAT2004	Operations Research	LT	3
MAT3003	Probability, Statistics and Reliability	LT	4
BIOxxxx	Environmental Sustainability	LT	3
	Select Any Two	TOTAL	06

CODE	HUMANITIES AND MANAGEMENT	TYPE	CREDITS
ENG1002	Communication for Technical Professionals	LT	3
ENG2002/ENG2001	Legal Writing & reporting/Technical writing and composition	LT	2
HUM1008	Swachh Bharat	PJ	2
HUM1007	Ethics and Values	LT	2
STS1001	Soft skills I	LT	1
STS2001	Soft skills II	LT	1
EXC1001	Extracurricular Activity	---	2
		Total	13
CODE	HUMANITIES AND MANAGEMENT - ELECTIVE	TYPE	CREDITS
MGT1001	Principles of Management and Organization Behaviour	LT	3
HUM2001	Cyber Psychology	LT	3
HUM2002	Forensic Psychology	LT	3
CSD3003	Cyber Crimes and Cyber laws	LT	3
MGT2007	Forensics Accounting and Fraud audit	LT	3
MGT2008	Disaster Recovery and Business Continuity Management	LT	3
HUM2003	Foundations of privacy and security	LT	3
PLA1001	Programming for Computing Engineers	LT	4
	Select Any Three	Total	9

Open Electives	Type	Credits
Select Courses worth 9 Credits		
PLA1003 - Logic and Problem Solving for Engineers $LT - 3(6^{TH}$ Sem)		

Sample Semester Course Arrangement – Five Years Integrated M Tech (Computer Science and Engineering) Specialization in Cyber Security

Semesters 1–4

Course Code	Course Title	Type	Cr.	Course Code	Course Title	Type	Cr.	Course Code	Course Title	Type	Cr.	Course Code	Course Title	Type	Cr.
	Semester 1				**Semester 2**				**Semester 3**				**Semester 4**		
ENG1002	Communication for Technical Professionals	LT	3	ENG2002	Legal Writing & reporting	LT	2	CSD1001	Principles of Digital Forensics	LT	3	MAT3002	Applied Linear Algebra	LT	3
PHY1001	Engineering Physics	LTP	4	MAT2009	Applied Cryptography	LT	4	CSE2003	Computer Architecture and Organization	LT	4	CSE3001	Database Management Systems	LTP	4
CHY1003	Forensic Chemistry	LT	3	ECE2002	Digital Logic Design	LTP	4	CSE2004	Theory of Computation and Compiler Design	LT	4	CSE3006	Computer Networks	LTP	4
CSE1001	Introduction to Problem Solving and Programming	LTP	4	CSE2001	Object Oriented Programming with C++	LTP	4	CSD3001	Data Structures and Analysis of Algorithms	LP	3	CSE3003	Operating Systems	LTP	4
MAT1001	Calculus and Laplace Transforms	LT	4	MAT2002	Discrete Mathematics and Graph Theory	LT	4	MAT2001	Differential and Difference Equations	LT	3		NS Elective-I	LT	3
EEE1001	Electric Circuits and Systems	LTP	4	CHY1002	Environmental Science	LT	3	CSE2098	Hum & Mgt Elective – I	LT	3		Open Elective - I		3
HUM1007	Ethics and Values	LT	2	HUM1008	Swachh Bharat	PJ	2	DSN2098	Project Exhibition – I	PJ	1	DSN2099	Project Exhibition – II	PJ	1
								DSN2096	Engineering Design	LT	2	EXC1001	Extra-Curricular Activity	--	2
Total credits			24	**Total credits**			23	**Total credits**			23	**Total credits**			24

Semesters 5–8

Course Code	Course Title	Type	Cr.	Course Code	Course Title	Type	Cr.	Course Code	Course Title	Type	Cr.	Course Code	Course Title	Type	Cr.
	Semester 5				**Semester 6**				**Semester 7**				**Semester 8**		
ECE3004	Microprocessors and Microcontrollers	LTP	4	CSD4002	Ethical Hacking	LTP	4	CSD5002	Virtualization Essentials	LP	3	CSD5009	Cyber Physical Systems	LTP	4
CSD3002	Secure Software Engineering	LTP	4		Program Elective-II	LP/LT	3		Program Elective-V	LP/LT	3	CSD5003	Database Security	LP	3
CSD4003	Network and System Security	LP	3		Program Elective-III	LP/LT	3		Program Elective-VI	LP/LT	3	CSD5005	Net. Analysis, Arch. & Design	LTP	4
CSE4001	Internet and Web Programming	LTP	4		Program Elective-IV	LP/LT	3		Hum & Mgt Elective-III	LT	3		Program Elective -VII	LP/LT	3
	Program Elective-I	LP/LT	3	CSD4001	Software Vulnerability Testing	LTP	4		Open Elective-II		3		Program Elective -VIII	LP/LT	3
STS1001	Soft Skills-I	P	1	STS2001	Soft Skills-II	P	1	CSD2097	Internship	---	2		Open Elective-III		3
	NS Elective-II	LT	3	CSD3099	Engineering Project in Community Service	PJ	2	CSD4098	Comprehensive Exam	---	2				
					Hum & Mgt Elect II	PT	3	CSD4004	Cyber Clinic	P	2				
Total credits			22	**Total credits**			23	**Total credits**			21	**Total credits**			20

	Semester 9		Semester 10

| CSD5198 | Project – 1 | PJ | 20 | CSD5199 | Project – 2 | PJ | 20 | |