G H RAISONI COLLEGE OF ENGINEERING & MANAGEMENT

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An Autonomous Institute Affiliated to Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur
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G H Raisoni College of Engineering & Management, Nagpur

(An Autonomous Institute affiliated to RTM Nagpur University Nagpur)

B. Tech. in Computer Science & Engineering (Cyber Security)

With Multidisciplinary Minor (MDM)

UG Scheme & Curriculum - 2023 (NEP 2020)

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B.Tech. Computer Science and Engineering (Cyber Security)

Course Code	Name of Course	Course Category	Teaching Scheme				Credits	Evaluation Scheme					
								Theory			Practical		Total Marks
			L	T	P	Total Hours		TAE	CAE	ESE	INT	EXT	
SEMESTER-III													
23BTSHL201CY	Discrete Mathematics and Graph Theory	PCC2	3	1		4	4	10	15	50	-	-	75
23BTCSL201CY	Data Structures and Algorithms	PCC3	3	-	-	3	4	10	15	50	-	-	75
23BTCSP201CY	Data Structures and Algorithms	PCC3	-	-	2	2		-	-	-	25	25	50
23BTXXXX	Multi-Disciplinary	MD1	2			2	2	10	15	50			75
23BTXXXX	Open elective -I	OE1	4			4	4	10	15	50			75
23BTMBL201CY	Engineering Economics and Industrial Management	EEMC1	2			2	2	10	15	50			75
23BTHUL20X	Humanities Elective	VEC1	2			2	2	10	15	50			75
23BTCYP202	Project –I (NGO)	CEP			2	2	2				50		50
TOTAL			**16**	**1**	**4**	**21**	**20**	**60**	**90**	**300**	**75**	**25**	**550**

For Multi-Disciplinary from others:

CSE:- Computer Architecture (23BTCSL204)
AI:- Knowledge Representation ……
DS:-Fundamental of Data Analytics

Open Elective – I :- Web Cloud Computing Application : 23BTCYL201

MD1: Cyber Law: 23BTCYL203

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								Theory			Practical		Total Marks
			L	T	P	Total Hours		TAE	CAE	ESE	INT	EXT	
SEMESTER-IV													
23BTCSL204CY	Database Management Systems	PCC4	3			3	4	10	15	50	-	-	75
23BTCSP204CY	Database Management Systems	PCC4			2	2		-	-	-	25	25	50
23BTCYL204	Computer Architecture and Operating System	PCC5	4			4	4	10	15	50			75
23BTXXXX	Multi-Disciplinary	MD2	2			2	2	10	15	50			75
23BTXXXX	Open elective -II	OE2	2			2	2	10	15	50			75
23BTXXXX	Skill Enhancement Course -III:	VSEC3	1	-	2	3	2	10	15		25	-	50
23BTSHL231CY	Aptitude & Employability Skills :2	AEC2	1	-	2	3	2	10	15		25	-	50
23BTMBL202CY	EDP	EEMC2	2	-		2	2	10	15	50		-	75
23BTSHL233CY	Universal Human Values 2: Understanding Harmony	VEC2	2			2	2	10	15	50			75
TOTAL			**17**	**0**	**6**	**23**	**20**	**80**	**120**	**300**	**75**	**25**	**600**

MD2:- Cyber Crimes and Investigation: **23BTCYL205**

Open Elective:- OE-II : Web Security :- **23BTCYL206**

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Course Code	Name of Course	Course Category	Teaching Scheme				Credits	Evaluation Scheme					
								Theory			Practical		Total Marks
			L	T	P	Total Hours		TAE	CAE	ESE	INT	EXT	
SEMESTER-V													
~~23BTCYL301~~ BTCY4TE301	Fundamentals of Cryptography	PCC6	3	1	-	4	4	10	15	50	-	-	75
~~23BTCYL302~~ BTCY3TE302	Cyber Laws & Ethics	PCC7	3	-	-	3	3	10	15	50	-	-	75
~~23BTCYL303~~ BTCY2TE303	Intro.to Penetration Testing	PCC8	2	-	-	4	3	10	15	50	-	-	75
23BTCYP303	Intro.to Penetration Testing	PCC8	-	-	2			-	-	-	25	-	25
23BTCYLXXX	PE-I	PEC1	3	-	-	3	4	10	15	50	-	-	75
23BTCYPXXX	PE-I	PEC1	-	-	2	2		-	-	-	25	-	25
23BTXXXX	Multi-Disciplinary	MD3	3	-	2	5	4	10	15	50	25	-	100
23BTXXXX	Open elective -III	OE3	2	-	-	2	2	10	15	50			75
23BTSHP301CY	**Research Methodology**	**RM**	-	-	4	4	2	-	-	-	25	-	25
TOTAL			**16**	**1**	**10**	**27**	**22**	**60**	**90**	**300**	**100**		**550**

MDM3: Computer Security: 23BTCYL307

OE3: Principles of Cryptography: 23BTCYL308

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B.Tech. Computer Science and Engineering (Cyber Security)

Course Code	Name of Course	Course Category	Teaching Scheme				Credits	Evaluation Scheme					
								Theory			Practical		Total Marks
			L	T	P	Total Hours		TAE	CAE	ESE	INT	EXT	
SEMESTER-VI													
23BTCYL310	Principles of Algorithm Design	PCC9	3			3	4	10	15	50			75
23BTCYP310	Principles of Algorithm Design	PCC9	-	-	2	2		-	-	-	25	25	50
23BTCYL312	Data Analytics	PCC10	3			3	4	10	15	50	-	-	75
23BTCYP312	Data Analytics	PCC10			2	2		-	-	-	25	25	50
23BTCYLXXX	PE-II	PEC2	3		-	3	4	10	15	50			75
23BTCYPXXX	PE-II	PEC2	-	-	2	2		-	-	-	25		25
23BTCYLXXX	PE-III	PEC3	4			4	4	10	15	50			75
23BT3XXXX	Multi-Disciplinary	MD4	2			2	2	10	15	50			75
23BTXXXXX	Skill Enhancement Course -IV	VSEC4	1	-	2	3	2	10	15		25	-	50
23BTSHP302CY	**Research Ethics & Technical Writing**	**RM**	-	-	**4**	**4**	**2**	-	-	-	**50**	-	**50**
TOTAL			16		12	28	22	60	90	250	150	50	600

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Course Code	Name of Course	Course Category	Teaching Scheme				Credits	Evaluation Scheme					
								Theory			Practical		Total Marks
			L	T	P	Total Hours		TAE	CAE	ESE	INT	EXT	
SEMESTER-VII													
23BTCYL401	Computer Security	PCC11	3		-	3	4	10	15	50	-	-	75
23BTCYP401	Computer Security	PCC11	-	-	2	2		-	-	-	25	25	50
23BTCYL403	Advance Information Security	PCC12	3			3	3	10	15	50			75
23BTCYL404	Web Technology	PCC13	2		-	2	3	10	15	50	-	-	75
23BTCYP404	Web Technology	PCC13	-	-	2	2		-	-	-	25	25	50
23BTCYLXXX	PE-IV	PEC4	4			4	4	10	15	50			75
23BTXXXXXX	Multi-Disciplinary	MD5	4			4	4	10	15	50			75
23BTCYP431	Project	P			8	8	4				50	50	100
TOTAL			**16**		**12**	**28**	**22**	**50**	**75**	**250**	**100**	**100**	**575**

Course Code	Name of Course	Course Category	Teaching Scheme				Credits	Evaluation Scheme					
								Theory			Practical		Total Marks
			L	T	P	Total Hours		TAE	CAE	ESE	INT	EXT	
SEMESTER-VIII													
23BTCYL4XX	PE-V (MOOCs based)	PEC5	4			4	4	10	15	50			75
23BTCYP418	Internship	I			24	24	12				200	100	300
TOTAL			**4**		**24**	**28**	**16**	**10**	**15**	**50**	**200**	**100**	**375**

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B.Tech. Computer Science and Engineering (Cyber Security)

Vocational & Skill Enhancement Courses (VSEC)

Course Code	Name of Course	Course Category	Teaching Scheme				Credits	Evaluation Scheme					
								Theory			Practical		Total Marks
			L	T	P	Total Hours		TAE	CAE	ESE	INT	EXT	
SEMESTER-I													
23BTCYL101 23BTCYP101	Computer Programming	VSEC1	1	-	2	3	2	10	15	-	25	-	50
23BTCYL103 23BTCYP103	Introduction to Linux	VSEC1	1	-	2	3	2	10	15	-	25	-	50
23BTCYL104 23BTCYP104	Data Science Tools	VSEC1	1	-	2	3	2	10	15	-	25	-	50
23BTCYL102 / 23BTCYP102	Data Visualization	VSEC1	1	-	2	3	2	10	15	-	25	-	50
SEMESTER-II													
23BTCYL111/ 23BTCYP112	Foundation of Data Analytics	VSEC2	1	-	2	3	2	10	15	-	25	-	50
23BTCYL105 23BTCYP105	Principle of Information Security	VSEC2	1	-	2	3	2	10	15	-	25	-	50
23BTCYL115 23BTCYP115	IoT Programming	VSEC2	1	-	2	3	2	10	15	-	25	-	50
23BTXXXX	Information Security Tools	VSEC2	1	-	2	3	2	10	15	-	25	-	50
SEMESTER-IV													
23BTCYLXXX 23BTCYPXXX	Web Development	VSEC3	1	-	2	3	2	10	15	-	25	-	50
23BTCYL210/ 23BTCYP211	Data Preprocessing	VSEC3	1	-	2	3	2	10	15	-	25	-	50
23BTCYL207 23BTCYP207	Principles of Object Oriented Programming	VSEC3	1	-	2	3	2	10	15	-	25	-	50
23BTCYL208 23BTCYP208	Security in IoT	VSEC3	1	-	2	3	2	10	15	-	25	-	50
SEMESTER-VI													
23BTCYL30823 23BTCYP308	Information Coding Technique	VSEC4	1	-	2	3	2	10	15	-	25	-	50
23BTCYL307 23BTCYP307	Cyber Forensic	VSEC4	1	-	2	3	2	10	15	-	25	-	50
23BTCYL305 23BTCYP305	Python for Data Science	VSEC4	1	-	2	3	2	10	15	-	25	-	50
23BTCYL306/ 23BTCYP306	Introduction to Computer Vision	VSEC4	1	-	2	3	2	10	15	-	25	-	50
TOTAL			**4**	**-**	**8**	**12**	**8**	**40**	**60**	**-**	**100**	**-**	**200**

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Multidisciplinary Minor from Other Department

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								Theory			Practical		Total Marks
			L	T	P	Total Hours		TAE	CAE	ESE	INT	EXT	
SEMESTER-III													
23BTEEL203CY	Solar Photovoltaic and it's Application	MDM1	2	-	-	2	**2**	10	15	50	-	-	75
SEMESTER-IV													
23BTDSL211CY	Data Analytics Tableu	MDM2	2	-	-	2	**2**	10	15	50	-	-	75
SEMESTER-V													
23BTXXXXX 23BTXXPXX	Microcontroller & Applications	MDM3	3	-	2	5	**4**	10	15	50	25	-	100
SEMESTER-VI													
23BTXXXXX	Application of Artificial Intelligence	MDM4	2	-	-	2	**2**	10	15	50	-	-	75
SEMESTER-VII													
23BTXXXXX	Social Networks	MDM5	4	-	-	4	**4**	10	15	50	-	-	75
TOTAL			**13**	**-**	**2**	**15**	**14**	**50**	**75**	**250**	**25**	**-**	**400**

Multidisciplinary Minor To Other Department

Course Code	Name of Course	Course Category	Teaching Scheme				Credits	Evaluation Scheme					
								Theory			Practical		Total Marks
			L	T	P	Total Hours		TAE	CAE	ESE	INT	EXT	
SEMESTER-III													
23BTCYL203	Cyber Laws	MDM1	2	-	-	2	**2**	10	15	50	-	-	75
SEMESTER-IV													
23BTCYL205	Cyber Crimes and Investigation	MDM2	2	-	-	2	**2**	10	15	50	-	-	75
SEMESTER-V													
23BTCYL307 23BTCYP307	Computer Security	MDM3	3	-	2	5	**4**	10	15	50	25	-	100
SEMESTER-VI													
23BTCYL313	Network Security	MDM4	2	-	-	2	**2**	10	15	50	-	-	75
SEMESTER-VII													
23BTCYL424	Cyber Forensic	MDM5	4	-	-	4	**4**	10	15	50	-	-	75
TOTAL			**13**	**-**	**2**	**15**	**14**	**50**	**75**	**250**	**25**	**-**	**400**

UG Scheme-2023 (NEP-2020)

Elective	3Security	5 Information Processing	2Internet of Things	4Artificial Intelligence & ML	1Data Science and Computing
Track	**Track-I**	**Track-II**	**Track-III**	**Track-IV**	**Track-V**
Electives with Laboratory					
Elective-I (Credits :4) (Semester- V)	**23BTCYL304/ 23BTCYP304** Ethical Hacking	**23BTCYLXXX** **23BTCYPXXX** Principles of DSP and Algorithm	**23BTCYLXXX 23BTCYPXXX** IoT Communications Protocols	**23BTCYL305 23BTCYP305** AI for IoT Applications	**23BTCYL306 23BTCYP306** High Performance Computing
Elective-II (Credits : 4) (Semester-VI)	**23BTCYL315/ 23BTCYP315** Web Application Security	**23BTCYL316** **23BTCYP316** Digital Image Processing	**23BTCYL317** **23BTCYP317** IoT using Robotics	**23BTCYL318 23BTCYP318** Predictive Modeling and Analytics	**23BTCYL319 23BTCYP319** Scalable Data Science
Electives without Laboratory					
Elective-III (Credits :4) (Semester-VI)	**23BTCYL321** Digital Forensic	**23BTCYL322** Audio and Speech Signal Processing	**23BTCYL323** Privacy and Security in IoT	**23BTCYL324** Deep Learning	**23BTCYL325** Distributed Computing
Elective-IV (Credits :4) (Semester- VII)	**23BTCYL405** Evidence Acquisition & Recovery	**23BTCYL406** Wireless Sensor Networks	**23BTCYL407** Application of IoT in Health Care	**23BTCYL408** Computer Vision	**23BTCYL409** Data Science for Engineers
Elective-V (Swayam) (Credits : 4) (Semester- VII)	**23BTCYL412** Cyber Security and Privacy (12 W)	**23BTCYL413** Pattern Recognition and Application (12 W)	**23BTCYL414** Introduction To Industry 4.0 And Industrial Internet Of Things (12 W)	**23BTCYL415** Reinforcement Learning (12 W)	**23BTCYL416** Artificial Intelligence : Search Methods For Problem Solving (12 W)