ANNEXURE – I

Credit Structure for Undergraduate programs

Sr. No.	Category Code	Category	Credits
1	HSSM	Ability Enhancement Course (AEC), Indian Knowledge System (IKS), Value Education Course (VEC), Entrepreneurship/Economics/Management courses	**10**
2	BSC	Basic Science courses	**14**
3	ESC	Engineering Science courses including workshop, drawing, basics of electrical/mechanical/computer etc.	**16**
4	PCC	Professional core courses	**70**
5	PEC	Professional Elective courses relevant to chosen specialization/branch	**10**
6	OE	Open subjects – Electives from other technical and /or emerging subjects	**08**
7	ELC	Project work, seminar and internship in industry or elsewhere, Industry Training and Skill Development, Capstone Course	**20**
8	VSEC	Vocations Skill Courses (VSC), Skill Enhancement Courses(SEC)	**10**
9	CC	Co-curricular Courses (CC) such as Health and Wellness, Yoga education sports, and fitness, Cultural Activities, NSS/NCC and Fine/ Applied/ Visual/ Performing Arts	**04**
10	MDM	Compulsory Multidisciplinary Minor	**14**
		TOTAL	**176**

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GROUP 1: SEMESTER I / GROUP 2: SEMESTER II

Sr No	Course Category	Course Code	Course Title	Hours per Week			Credits	Maximum Marks		
				L	T	P		Continual Assessment	End Sem Examination	Total
1	BSC	AS101T	Engineering Physics & Material Sciences	2	0	-	2	15	35	50
2	BSC	AS101P	Engineering Physics & Materials Science Lab	-	-	2	1	25	25	50
3	BSC	AS102T	Applied Mathematics – I	4	-	-	4	30	70	100
4	ESC	AS103T	Engineering Practices-I (Electrical & Electronics)	3	-	-	3	30	70	100
5	ESC	AS103P	Engineering Practices-I Lab (Electrical & Electronics)	-	-	2	1	25	25	50
6	ESC	AS104T	Logic building with C	2	-	-	2	15	35	50
7	ESC	AS104P	Logic building with C Lab	-	-	2	1	25	25	50
8	AEC	AS105P	Business Communication Skills I Lab	-	-	2	1	25	25	50
9	IKS	AS106T	Indian Knowledge Systems	2	-	-	2	15	35	50
10	SEC	AS107T	Career Development I	-	-	2	1	50	-	50
11	PCC	II101T	Program Foundation I	2	-	-	2	15	35	50
12	CC	AS108T	Co-curricular Courses - I	-	-	-	2	50	-	50
Total				**17**	**-**	**10**	**44**	**320**	**380**	**700**

GROUP 1: SEMESTER II / GROUP 2: SEMESTER I

Sr No	Course Category	Course Code	Course Title	Hours per Week			Credits	Maximum Marks		
				L	T	P		Continual Assessment	End Sem Examination	Total
1	BSC	AS201T	Engineering Chemistry & Environmental Science	2	-	--	2	15	35	50
2	BSC	AS201P	Engineering Chemistry & Environmental Science Lab	-	-	2	1	25	25	50
3	BSC	AS202T	Applied Mathematics–II	4	-	-	4	30	70	100
4	ESC	AS203T	Engineering Practices-II(Civil & Mechanical)	3	-	-	3	30	70	100
5	ESC	AS203P	Engineering Practices-II Lab (Civil & Mechanical)	-	-	2	1	25	25	50
6	ESC	AS204T	Problem Solving with Python	2	-	-	2	15	35	50
7	ESC	AS204P	Problem Solving with Python Lab	-	-	2	1	25	25	50
8	AEC	AS205P	Business Communication Skills II Lab		-	2	1	25	25	50
9	SEC	AS206T	Career Development II		-	2	1	50	-	50
10	PCC	II201T	Program Foundation II	2	-	-	2	15	35	50
11	ESC	AS207T	Design Thinking	2	-	-	2	30	70	100
12	CC	AS208T	Co-curricular Courses - I	-	-	-	2	50	-	50
			Total	17	-	10	22	345	405	750

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SEMESTER III

Sr No	Course Category	Course Code	Course Title	Hours per Week			Credits	Maximum Marks		
				L	T	P		Continual Assessment	End Sem Examination	Total
1	PCC	II301T	Analog and Digital Electronics	3	-	-	3	30	70	100
2	PCC	II301P	Analog and Digital Electronics Lab	-	-	2	1	25	25	50
3	PCC	II302T	Analog and Digital Communication	3	-	-	3	30	70	100
4	PCC	II302P	Analog and Digital Communication Lab	-	-	2	1	25	25	50
5	PCC	II303T	Object Oriented Programming and Data Structures	3	-	-	3	30	70	100
6	PCC	II303P	Object Oriented Programming and Data Structures Lab	-	-	2	1	25	25	50
7	PCC	II304T	IoT Sensors and Actuators	3	-	-	3	30	70	100
8	PCC	II305T	Electronics and Mechanical Measurements	3	-	-	3	30	70	100
9	SEC	II306P	Career Development III	-	-	2	1	50	-	50
10	VEC	II307T	Value Education Course I	2	-	-	2	15	35	50
11	ELC	II308P	Micro Project I*	-	-	2	1	50	-	50
			Total	17	0	10	22	340	460	800
12	MDM		Multidisciplinary Minor - I	2	-	-	2	15	35	50
			Total	19		10	24	355	495	850

* **Field Project or Community engagement project in the major discipline**

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SEMESTER IV

Sr No	Course Category	Course Code	Course Title	Hours per Week			Credits	Maximum Marks		
				L	T	P		Continual Assessment	End Sem Examination	Total
1	BSC	AS309T	Applied Mathematics - III	3	-	-	3	30	70	100
2	PCC	II401T	Microprocessors and Microcontrollers	3	-	-	3	30	70	100
3	PCC	II401P	Microprocessors and Microcontrollers Lab	-	-	2	1	25	25	50
4	PCC	II402T	Computer Networking and Data Communication	3	-	-	3	30	70	100
5	PCC	II403T	IoT Protocols and Architecture	3	-	-	3	30	70	100
6	PCC	II404P	Internet of Things Lab.	-	-	2	1	25	25	50
7	OE	II405T	Open Elective - I	2	-	-	2	15	35	50
8	VSC	II406T	Technical Skill Development - I	2	-	-	2	50	-	50
9	VEC	II407T	Value Education Course II	2	-	-	2	15	35	50
10	SEC	II408P	Career Development - IV	-	-	2	1	50	-	50
11	ELC	II409P	Micro Project II*	-	-	2	1	50	-	50
			Total	**18**	**0**	**8**	**22**	**350**	**400**	**750**
12	MDM		Multidisciplinary Minor - II	3	-	-	3	30	70	100
			Total	**21**		**8**	**25**	**380**	**470**	**850**

* **Field Project or Community engagement project in the major discipline**

Open Elective - I	
II405T(i)	**Cyber Physical Systems**

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SEMESTER V

Sr No	Course Category	Course Code	Course Title	Hours per Week			Credits	Maximum Marks		
				L	T	P		Continual Assessment	End Sem Examination	Total
1	PCC	II501T	Signal Processing	3	-	-	3	30	70	100
2	PCC	II501P	Signal Processing Lab.	-	-	2	1	25	25	50
3	PCC	II502T	Database Management Systems	3	-	-	3	30	70	100
4	PCC	II502P	Database Management Systems	-	-	2	1	25	25	50
5	PCC	II503T	Operating Systems	3	-	-	3	30	70	100
6	PEC	II504T	Professional Elective - I	3	-	-	3	30	70	100
7	OE	II505T	Open Elective - II	3	-	-	3	30	70	100
8	VSC	II506T	Technical Skill Development - II	2	-	-	2	50	-	50
9	SEC	II507P	Career Development - V	-	-	2	1	50	-	50
			Total	17	0	6	20	300	400	700
12	MDM		Multidisciplinary Minor - III	3	-	-	3	30	70	100
			Total	20		6	23	330	470	800

Open Elective - II	
II505T (i)	**Industrial and Medical IoT**
II505T (ii)	**IoT for Social Good**

Professional Elective- I	
II504T (i)	**Computer Architecture and Organization**
II504T (ii)	**Basic Electrical Machines**
II504T (iii)	**Manufacturing Processes**

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SEMESTER VI

Sr No	Course Category	Course Code	Course Title	Hours per Week L	T	P	Credits	Continual Assessment	End Sem Examination	Total
1	PCC	II601T	Machine Learning	3	-	-	3	30	70	100
2	PCC	II601P	Machine Learning Lab	-	-	2	1	25	25	50
3	PCC	II602T	Data Analytics for IoT	3	-	-	3	30	70	100
4	PCC	II602P	Data Analytics for IoT Lab	-	-	2	1	25	25	50
5	PCC	II603T	Cloud Computing	3	-	-	3	30	70	100
6	PCC	II603P	Cloud Computing Lab	-	-	2	1	25	25	50
7	PEC	II604T	Professional Elective- II	3	-	-	3	30	70	100
8	AEC	AS601T	Economics & Management	2	-	-	2	15	35	50
9	OE	II605T	Open Elective- III	3	-	-	3	30	70	100
10	ELC	II606P	Project - I	-	-	2	1	50	50	100
11	SEC	II607P	Career Development -VI	-	-	2	1	50	-	50
			Total	**17**		**10**	**22**	340	510	850
12	MDM		Multidisciplinary Minor - IV	3	-	-	3	30	70	100
			Total	**20**		**10**	**25**	370	580	950

Open Elective - III	
II605T (i)	**Security in Industrial IoT**
II605T (ii)	**Condition Monitoring in Industry**

Professional Elective- II	
II604T (i)	**Digital Image Processing**
II604T (ii)	**Privacy and Security in IoT**
II604T (iii)	**Blockchain Technology**
II604T (iv)	**Cyber Security & Privacy**
II604T (v)	**Cyber Physical Systems**
II604T (vi)	**Mechanical Structure Design**
II604T (vii)	**Robotics and Automation**

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SEMESTER VII

Sr No	Course Category	Course Code	Course Title	Hours per Week			Credits	Maximum Marks		
				L	T	P		Continual Assessment	End Sem Examination	Total
1	PCC	II701T	Industrial IoT and Industry 4.0	3	-	-	3	30	70	100
2	PCC	II702T	Artificial Intelligence	3	-	-	3	30	70	100
3	PCC	II702P	Artificial Intelligence Lab	-	-	2	1	25	25	50
4	PCC	II703T	Dashboard & Mobile Application Development	3	-	-	3	30	70	100
5	PCC	II703P	Dashboard & Mobile Application Development Lab	-	-	2	1	25	25	50
6	PEC	II704T	Professional Elective - III	3	-	-	3	30	70	100
7	PEC	II704P	Professional Elective - III Lab	-	-	2	1	25	25	50
8	ELC	II705P	Project - II	-	-	6	3	50	50	100
9	ELC	II706P	Summer / Winter Internship*	-	-	-	2	50	--	50
			Total	**12**	**0**	**12**	**20**	**295**	405	700
12	MDM		Multidisciplinary Minor - V	3	-	-	3	30	70	100
			Total	**15**		**12**	**23**	**325**	475	800

* **Summer / Winter Internship (Evaluation of Four weeks Internship Completion till 6th Semester)**

Professional Elective- III	
II704T (i)	**PLC and SCADA Systems**
II704T (ii)	**Computer Vision**
II704T (iii)	**Natural Language Processing**
II704T (iv)	**Embedded Systems**
II704T (v)	**Deep Learning**

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SEMESTER VIII

Option A

Sr No	Course Category	Course Code	Course Title	Hours per Week			Credits	Maximum Marks		
				L	T	P		Continual Assessment	End Sem Examination	Total
1	ELC	II801P*	Project based on one semester internship in Industry/Research Institute/ National Laboratories/ Incubation Center	-	-	-	12	300	100	400
			Total	-	-	-	**12**	**300**	**100**	**400**

*End semester examination will consist of evaluation of seminar & project report.

Option B

Sr No	Course Category	Course Code	Course Title	Hours per Week			Credits	Maximum Marks		
				L	T	P		Continual Assessment	End Sem Examination	Total
1	ELC	II801P#	Institutional Internship	-	-	12	6	100	100	200
2	ELC	II802P	Project – III	-	-	12	6	100	100	200
			Total	-	-	**0**	**12**	**300**	**100**	**400**

Option B is available to students only after recommendation of the concerned Head of the department. The project and internship should contribute towards career development plan of the students.

* Minimum 90 days internship in any industry and project is to be carried out during internship.

Two NPTEL courses (as per choice of student) or Institutional Internship by IEDC, SVPCET.

EXIT OPTIONS

Award of UG Certificate in Major with 40 credits and an additional 8 credits (After First Year)

EXIT COURSES			
S.N.	Course name	Mode of conduction	Credits

Award of UG Diploma in Major with _____ credits and an additional 8 credits (After Second Year)

EXIT COURSES			
S.N.	Course name	Mode of conduction	Credits

Award of UG Degree in Major with _____ credits and an additional 8 credits (After Third Year)

EXIT COURSES			
S.N.	Course name	Mode of conduction	Credits

ST. VINCENT PALLOTTI COLLEGE OF ENGINEERING & TECHNOLOGY, NAGPUR

(An autonomous institution affiliated to Rashtrasant Tukadoji Maharaj Nagpur University)

B. Tech. Scheme of Examination & Syllabus 2023-24

INDUSTRIAL IoT

Multidisciplinary Minor

Minor 1 :- Management

Sr No	Sem	Course Category	Course Code	CourseTitle	L	T	P	Credits	Continual Assessment	End Sem Examination	Total
1		MDM									
2		MDM									
3		MDM									
4		MDM									
			Total					14			

Multidisciplinary Minor

Minor 2 :- Emerging Trends

Sr No	Sem	Course Category	Course Code	CourseTitle	L	T	P	Credits	Continual Assessment	End Sem Examination	Total
1		MDM									
2		MDM									
3		MDM									
4		MDM									
			Total					14			

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