



ST. VINCENT PALLOTTI COLLEGE OF ENGINEERING & TECHNOLOGY, NAGPUR

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

B. Tech. Scheme of Examination & Syllabus 2025-26

INDUSTRIAL IoT

Annexure – I

CREDIT FRAMEWORK STRUCTURE

Semester		I	II	III	IV	V	VI	VII	VIII	Total Credits
Basic Science Course	BSC/ESC	7	7							14
Engineering Science Course		6	6							12
Program Core Course (PCC)	Program Courses	2	2	13	10	7	4	6		44
Program Elective Course (PEC)						4	6	6	4	20
Multidisciplinary Minor (MDM)	Multidisciplinary Courses			2	3	3	3	3		14
Open Elective (OE) Other than a particular program						2	3	3		08
Vocational and Skill Enhancement Course (VSEC)	Skill Courses	2		1	1	2	2			08
Ability Enhancement Course (AEC -01, AEC-02)	Humanities Social Science and Management (HSSM)	1	1			2				04
Entrepreneurship/Economics/Management Courses				2	2					04
Indian Knowledge System (IKS)			2							02
Value Education Course (VEC)				2	2					04
Research Methodology	Experiential Learning Courses								4	04
Comm. Engg. Project (CEP)/ Field Project (FP) Project					2					02
Internship/OJT							2	2		04
Co-curricular Courses (CC)	Liberal Learning Courses	2	2						12	12
Total Credits (Major)		20	160							

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SEMESTER I

Sr No	Course Category	Course Code	Course Title	Hours per Week			Credits	Mid-Sem Examination	Maximum Marks			Minimum Passing Marks	No. of Hrs for ESE
				L	T	P			Continual Assessment	End Sem Examination	Total		
1.	BSC	25II101T	Applied Physics	2	-	-	2	10	10	30	50	23	1.5
2.	BSC	25II101P	Applied Physics Lab	-	-	2	1	-	25	25	50	25	-
3.	BSC	25II102T	Linear Algebra & Calculus	3	-	-	3	20	20	60	100	45	3
4.	BSC	25II102P	Linear Algebra & Calculus Lab	-	-	2	1	-	25	25	50	25	-
5.	ESC	25II103T	C Programming	3	-	-	3	20	20	60	100	45	3
6.	ESC	25II103P	C Programming Lab	-	-	2	1	-	25	25	50	25	-
7.	ESC	25II104T	Circuits and Networks	2	-	-	2	10	10	30	50	23	1.5
8.	PCC	25II105T	Electronics Foundations for IoT	2	-	-	2	10	10	30	50	23	1.5
9.	AEC	25II106P	Business Communication Skills I Lab	-	-	2	1	-	25	25	50	25	-
10.	SEC	25II207T	Design Thinking#	2	-	-	2	10	10	30	50	23	1.5
11.	CC	25II108T	Co-curricular Courses - I	2	-	-	2	10	10	30	50	23	1.5
Total				16	-	8	20	90	190	370	650	305	

- Course is to be taken online through NPTEL

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SEMESTER II

Sr No	Course Category	Course Code	Course Title	Hours per Week			Credits	Maximum Marks				Minimum Passing Marks	No. of Hrs for ESE
				L	T	P		Mid-Sem Examination	Continual Assessment	End Sem Examination	Total		
1.	BSC	25II201T	Applied Chemistry	2	-	-	2	10	10	30	50	23	1.5
2.	BSC	25II201P	Applied Chemistry Lab	-	-	2	1	-	25	25	50	25	-
3.	BSC	25II202T	Statistics and Transforms	3	-	-	3	20	20	60	100	45	3
4.	BSC	25II202T	Statistics and Transforms Lab	-	-	2	1	-	25	25	50	25	-
5.	ESC	25II203T	Python Programming	3	-	-	3	20	20	60	100	45	3
6.	ESC	25II203P	Python Programming Lab	-	-	2	1	-	25	25	50	25	-
7.	ESC	25II204P	Electronics Lab	-	-	4	2	-	25	25	50	25	-
8.	PCC	25II205T	Digital Circuits	2	-	-	2	10	10	30	50	23	1.5
9.	AEC	25II206P	Business Communication Skills – II Lab	-	-	2	1	-	25	25	50	25	-
10.	IKS	25II107T	Indian Knowledge System#	2	-	-	2	10	10	30	50	23	1.5
11.	CC	25II208T	Co-curricular Courses – II	2	-	-	2	-	50	-	50	25	-
Total				14	-	12	20	70	245	335	650	309	

- Course is to be taken online through NPTEL

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SEMESTER III

Sr No	Course Category	Course Code	Course Title	Hours per Week			Credits	Maximum Marks				Minimum Passing Marks	No. of Hrs for ESE
				L	T	P		Mid-Sem Examination	Continual Assessment	End Sem Examination	Total		
1.	PCC	25II301T	Microprocessors and Microcontrollers	3	-	-	3	20	20	60	100	45	3
2.	PCC	25II301P	Microprocessors and Microcontrollers Lab	-	-	2	1	-	25	25	50	25	-
3.	PCC	25II302T	Signals and Systems	2	-	-	2	10	10	30	50	23	1.5
4.	PCC	25II303T	Analog and Digital Communication	2	-	-	2	10	10	30	50	23	1.5
5.	PCC	25II304P	Signals and Communication Lab	-	-	2	1	-	25	25	50	25	-
6.	PCC	25II305T	Mechatronics	3	-	-	3	20	20	60	100	45	3
7.	PCC	25II305P	Mechatronics Lab	-	-	2	1	-	25	25	50	25	-
8.	VEC	25ES401T	Environmental Science	2	-	-	2	10	10	30	50	23	1.5
9.	HSSM	25ES402T	Fundamentals of Economics and Management	2	-	-	2	10	10	30	50	23	1.5
10.	SEC	25II341P	Career Development I	-	-	2	1	-	25	25	50	25	-
11.	MDM	25II331M	MDM-I (Refer MDM basket)	2	-	-	2	10	10	30	50	23	1.5
Total				16		08	20	90	190	370	650	305	

Note: Any one PCC will be online through NPTEL. The course will be notified on month prior to the commencement of the semester.

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SEMESTER IV

Sr No	Course Category	Course Code	Course Title	Hours per Week			Credits	Maximum Marks				Minimum Passing Marks	No. of Hrs for ESE
				L	T	P		Mid-Sem Examination	Continual Assessment	End Sem Examination	Total		
1.	PCC	25II401T	Object Oriented Programming	2	-	-	2	10	10	30	50	23	1.5
2.	PCC	25II401P	Object Oriented Programming Lab	-	-	2	1	-	25	25	50	25	-
3.	PCC	25II402T	IoT Protocols and Architecture	3	-	-	3	20	20	60	100	45	3
4.	PCC	25II402P	IoT Protocols and Architecture Lab	-	-	2	1	-	25	25	50	25	-
5.	PCC	25II403T	Computer Networks	3	-	-	3	20	20	60	100	45	3
6.	VEC	25ES301T	Constitution of India	2	-	-	2	10	10	30	50	23	1.5
7.	HSSM	25ES302T	Fundamentals of Entrepreneurship	2	-	-	2	10	10	30	50	23	1.5
8.	SEC	25II441P	Career Development - II	-	-	2	1	-	50	-	50	25	-
9.	CEP	25II404P	Mini Project*	-	-	4	2	-	50	-	50	25	-
10.	MDM	25II431M	MDM-II (Refer MDM basket)	3	-	-	3	20	20	60	100	45	3
Total				15	10	20	20	90	240	320	650	304	

* Field Project or Community engagement project in the major discipline

Note: Any one PCC will be online through NPTEL. The course will be notified on month prior to the commencement of the semester.

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SEMESTER V

Sr No	Course Category	Course Code	Course Title	Hours per Week			Credits	Maximum Marks				Minimum Passing Marks	No of Hours for ESE
				L	T	P		Mid-Sem Examination	Continual Assessment	End Sem Examination	Total		
1.	PCC	25II501T	Foundations of Data Science	3	-	-	3	20	20	60	100	45	3
2.	PCC	25II502T	Artificial Intelligence and Machine Learning	3	-	-	3	20	20	60	100	45	3
3.	PCC	25II503P	Data Science, AI and ML Lab	-	-	2	1	-	25	25	50	25	-
4.	PEC	25II504T	Professional Elective – I (Refer PE Basket)	3	-	-	3	20	20	60	100	45	3
5.	PEC	25II504P	Professional Elective – I Lab (Refer PE Basket)	-	-	2	1	-	25	25	50	25	-
6.	VSC	25II505P	Technical Skill Development - I	-	-	4	2	-	50	-	50	25	-
7.	AEC	25II541P	English for Competitive Exams	-	-	4	2	-	50	-	50	25	-
8.	MDM	25II531M	MDM – III (Refer MDM basket)	3	-	-	3	20	20	60	100	45	3
9.	OE	25II561O	Open Elective – I (Refer OE basket)	2	-	-	2	10	10	30	50	23	1.5
Total				14		12	20	90	240	320	650	303	

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SEMESTER VI

Sr No	Course Category	Course Code	Course Title	Hours per Week			Credits	Maximum Marks				Minimum Passing Marks	No of Hours for ESE
				L	T	P		Mid-Sem Examination	Continual Assessment	End Sem Examination	Total		
1.	PCC	25II601T	Embedded Systems for IoT	3	-	-	3	20	20	60	100	45	3
2.	PCC	25II601P	Embedded Systems for IoT	-	-	2	1	-	50	-	50	25	-
3.	PEC	25II602T	Professional Elective – II (Refer PE Basket)	3	-	-	3	20	20	60	100	45	3
4.	PEC	25II603T	Professional Elective – III (Refer PE Basket)	3	-	-	3	20	20	60	100	45	3
5.	VSC	25II604P	Technical Skill Development -II	-	-	4	2	-	50	-	50	25	-
6.	PROJ	25II605P	Project – I	-	-	4	2	-	50	50	100	50	-
7.	MDM	25II631M	MDM – IV (Refer MDM basket)	3	-	-	3	20	20	60	100	45	3
8.	OE	25II661O	Open Elective – II (Refer OE basket)	3	-	-	3	20	20	60	100	45	3
Total				15		10	20	100	250	350	700	325	

Note: Any one PCC will be online through NPTEL. The course will be notified on month prior to the commencement of the semester.

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SEMESTER VII

Sr No	Course Category	Course Code	Course Title	Hours per Week			Credits	Maximum Marks				Minimum Passing Marks	No of Hours for ESE
				L	T	P		Mid-Sem Examination	Continual Assessment	End Sem Examination	Total		
1.	PCC	25II701T	Cloud Computing	3	-	-	3	20	20	60	100	45	3
2.	PCC	25II701P	Cloud Computing Lab	-	-	2	1	-	25	25	50	25	-
3.	PCC	25II702P	Industrial IoT Lab	-	-	2	1	-	25	25	50	25	-
4.	PCC	25II703P	Dashboard and Mobile Application Development Lab	-	-	2	1	-	25	25	50	25	-
5.	PEC	25II704T	Professional Elective – IV (Refer PE Basket)	3	-	-	3	20	20	60	100	45	3
6.	PEC	25II705T	Professional Elective – V (Refer PE Basket)	3	-	-	3	20	20	60	100	45	3
7.	PROJ	25II706P	Project - II	-	-	4	2	-	50	50	100	50	-
8.	MDM	25II731M	MDM – V (Refer MDM basket)	3	-	-	3	20	20	60	100	45	3
9.	OE	25II761O	Open Elective – III (Refer OE basket)	3	-	-	3	20	20	60	100	45	3
Total				15		10	20	100	225	425	750	350	

Note: Any one PCC will be online through NPTEL. The course will be notified on month prior to the commencement of the semester.

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SEMESTER VIII

Option A

Sr No	Course Category	Course Code	Course Title	Hours per Week			Credits	Maximum Marks				Minimum Passing Marks	No of Hours for ESE
				L	T	P		Continual Assessment	Mid-Sem Examination	End Sem Examination	Total		
1	RM	25ES801T	Research Methodology [#]	2	-	-	2	10	10	30	50	23	1.5
2	RM	25ES802P	Research Methodology Lab [#]	-	-	4	2	-	25	25	50	25	-
3	PEC	25II803T	Professional Elective [#] - VI (Refer PE Basket)	3	-	-	3	20	20	60	100	45	3
4	PEC	25II803P	Professional Elective -VI Lab [#] (Refer PE Basket)	-	-	2	1	-	25	25	50	25	-
5	OJT	25II804P(i)	Industry/Research Internship [*]	-	-	24	12		300	100	400	200	-
Total				5	-	30	20	30	380	240	350	118	

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SEMESTER VIII

Option B

Sr No	Course Category	Course Code	Course Title	Hours per Week			Credits	Maximum Marks			Minimum Passing Marks	No of Hours for ESE	
				L	T	P		Continual Assessment	Mid-Sem Examination	End Sem Examination			Total
1	RM	25ES801T	Research Methodology [#]	2	-	-	2	10	10	30	50	23	1.5
2	RM	25ES802P	Research Methodology Lab [#]	-	-	4	2	-	25	25	50	25	-
3	PEC	25II803T	Professional Elective [#] - VI (Refer PE Basket)	3	-	-	3	20	20	60	100	45	3
4	PEC	25II803P	Professional Elective – VI Lab [#] (Refer PE Basket)	-	-	2	1	-	25	25	50	25	-
5	OJT	25II804P(ii)	Institutional Internship ^{\$} & Project III	-	-	24	12	-	300	100	400	200	-
Total				5	-	30	20	30	380	240	650	318	

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.

- Courses to be mapped with NPTEL/SWAYAM/MOOC offered course in that semester.

Exam will be conducted by NPTEL/Institute.

* One semester internship in any industry is to be carried out.

\$ Two NPTEL courses of total 6 credits (as per choice of student) or Institutional Internship by IEDC, SVP CET.

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Basket for Multi-Disciplinary Minor Courses (MDM)

A. INDUSTRIAL IoT

Semester	Course Category	Course Code	Name of Course	Credits
III	MDM - I	25II331M	Microcontrollers: Arduino Playground	2
IV	MDM - II	25II431M	Introduction to IoT	3
V	MDM - III	25II531M	IoT Connectivity and Communication Protocols	3
VI	MDM - IV	25II631M	Fundamentals of Automation	3
VII	MDM - V	25II731M	Fundamentals of Industry 4.0 and Industrial IoT	3

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Basket for Program Elective Courses (PEC)

B. INDUSTRIAL IoT

Semester	Course Category	Course Code	Name of Course	Credits
V	PEC	25II504T (i)	Data Structures and Algorithms	3
V	PEC	25II504P (i)	Data Structures and Algorithms Lab	1
V	PEC	25II504T (ii)	Database Management Systems	3
V	PEC	25II504P (ii)	Database Management Systems Lab	1
VI	PEC	25II602T (i)	Industrial Automation	3
VI	PEC	25II602T (ii)	Digital Signal Processing	3
VI	PEC	25II603T (i)	Control Systems Engineering	3
VII	PEC	25II702T (i)	Industrial IoT and Industry 4.0	3
VII	PEC	25II703T (i)	Privacy and Security in IoT	3
VII	PEC	25II703T (ii)	Robotics	3
VIII	PEC	25II803T (i)	Digital Image Processing	3
VIII	PEC	25II803P (i)	Digital Image Processing Lab	3

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Basket for Open Elective Courses (OE)

C. INDUSTRIAL IoT

Semester	Course Category	Course Code	Name of Course	Credits
V	OE	25II561O (i)	Fundamentals of 3D Printing	2
V	OE	25II561O (ii)	Introduction to IoT	2
VI	OE	25II661O (i)	Fundamentals of Industrial Automation	3
VI	OE	25II661O (ii)	Fundamentals of Industry 4.0 and Industrial IoT	3
VII	OE	25II761O (i)	Robotics	3
VII	OE	25II761O (ii)	Privacy and Security in IoT	3

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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
1.	Internship	Offline	8
2.			
3.			

Award of UG Diploma in Major with 80 credits and an additional 8 credits (After Second Year)

EXIT COURSES			
S.N.	Course name	Mode of conduction	Credits
1.	Internship	Offline	8
2.			
3.			

Award of UG Degree in Major with 120 credits and an additional 8 credits (After Third Year)

EXIT COURSES			
S.N.	Course name	Mode of conduction	Credits
1.	Internship	Offline	8
2.			

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