

SCTR's Pune Institute of Computer Technology (PICT), Pune

Department of Computer Engineering (CE)

**Structure for T.Y B.Tech. (CE)
[Academic Year 2026-27 onwards]**



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Abbreviations used

Sr. No.	Broad Category	Sub- Category of course	Category Code
I.	BSC/ESC	Basic Science Course (BSC)	01
		Engineering Science Course (ESC)	02
II.	Program Courses (PC)	Program Core Course (PCC)	03
		Program Elective Course (PEC)	04
III.	Multidisciplinary courses (MC)	Multidisciplinary Minor (MDM)	05
		Open Elective (OE) Other than particular program	06
IV.	Skill Courses (SC)	Vocational and Skill Enhancement Course (VSEC)	07
V.	Humanities Social Science and Management (HSSM)	Ability Enhancement Course (AEC-01, AEC-02)	08
		Entrepreneurship/Economics/ Management Courses (EEM)	09
		Indian Knowledge System (IKS)	10
		Value Education Course (VEC)	11
VI.	Experiential Learning Courses (ELC)	Research Methodology (RM)	12
		Community engagement Project (CEP) / Field Project (FP)/Co-curricular Activities (CCA)	13
		Project (PRJ)	14
		Internship/ On Job Training (IP/OJT)	15

Semester wise distribution of Credits and Marks

Class	Sem-I – Credits	Sem-II – Credits	Total Credits	Sem-I – Marks	Sem-II – Marks	Total Marks
FY	20	20	40	725	750	1475
SY	22	22	44	750	750	1500
TY	20	20	40	750	750	1500
B-Tech	20	16	36	700	400	1100
Total	82	78	160	2925	2650	5575

Third Year B.Tech. (Semester - V)

Semester V			Teaching Scheme (Hours/Week)				Credits/ Grades				Examination Scheme and Marks						
Category of Course	Course code	Name of the Course (Short forms)	L	P	T	Total	L	P	T	Total	Theory			Practical			Total
											CIE	ISE	ESE	CIE	ESE		
											[20]	[20]	[60]	TW	(PR)	(OR)	
PCC	1503111	Computer Networks (CN)	2	-	-	2	2	-	-	2	20	20	60	-	-	-	100
PCC	1503112	Automata Theory and Compiler Design (ATCD)	3	-	-	3	3	-	-	3	20	20	60	-	-	-	100
PCC	1503113	Design and Analysis of Algorithms (DAA)	3	-	-	3	3	-	-	3	20	20	60	-	-	-	100
PCC	1503214	Computer Networks Lab (CNL)	-	2	-	2	-	1	-	1	-	-	-	25	-	25	50
PCC	1503215	Design and Analysis of Algorithms Lab (DAAL)	-	2	-	2	-	1	-	1	-	-	-	25	25	-	50
PEC	15041X1	Program Elective-I	3	-	-	3	3	-	-	3	20	20	60	-	-	-	100
PEC	15042X1	Program Elective-I Lab	-	2	-	2	-	1	-	1	-	-	-	25	25	-	50
MDM	05051X3	MDM - 3	2	-	-	2	2	-	-	2	20	20	60	-	-	-	100
MDM	05052X3	MDM - 3 #	-	2	-	2	-	1	-	1	-	-	-	25	-	-	25
AEC	0508204	Leadership and Management Skills (LMS)	-	2	-	2	-	1	-	1	-	-	-	25	-	-	25
OE	05063XX	Open Elective -III *	-	-	2	2	-	-	2	2	-	-	50	-	-	-	50
Total			13	10	2	25	13	5	2	20	100	100	350	125	50	25	750

#: Tutorial or laboratory as applicable. MDLX-X: First X is basket number; Second X is course number in that basket, L, P, and T has usual meaning.

Refer Annexure-1 for MDM details.

*: Open elective (OE) offered by online platforms such as SWAYAM/NPTEL, Refer Annexure-II for details.

Program Elective Courses-I (PEC-1)

Domain Name	Course Code	Course name
Artificial Intelligence and Data Science (AIDS)	1504111	Foundations of Data Science (FDS)
Software System Development (SSD)	1504121	File Systems Design & Rust Programming (FSDRP)
Computer Vision (CV)	1504131	Computer Graphics and Gaming (CGG)
Hybrid Computing (HC)	1504141	Parallel and Distributed Computing (PDC)
Web Technologies (WT)	1504151	Client-Side Technologies and Frameworks (CSTF)
Cyber Security (CS)	1504161	Elementary Cryptography (ECG)

Third Year B.Tech. (Semester - VI)

Semester- VI			Teaching Scheme (Hours/Week)				Credits/ Grades				Examination Scheme and Marks						
Category of Course	Course code	Name of the Course (Short forms)	L	P	T	Total	L	P	T	Total	Theory			Practical			Total
											CIE	ISE	ESE	CIE	ESE		
											[20]	[20]	[60]	TW	(PR)	(OR)	
PCC	1603116	Artificial Intelligence and Machine Learning (AIML)	3	-	-	3	3	-	-	3	20	20	60	-	-	-	100
PCC	1603117	Cloud Computing (CC)	2	-	-	2	2	-	-	2	20	20	60	-	-	-	100
PCC	1603218	Software Lab. (SL)	-	2	-	2	-	1	-	1	-	-	-	25	25	-	50
MDM	06051X4	MDM - 4	2	-	-	2	2	-	-	2	20	20	60	-	-	-	100
MDM	06052X4	MDM - 4 #	-	2	-	2	-	1	-	1	-	-	-	25	-	-	25
VSEC	1607202	Seminar/Technical Presentation Based on Mini Project (STP)	-	2	-	2	-	1	-	1	-	-	-	-	-	25	25
PEC	16041X2	Program Elective-II	3	-	-	3	3	-	-	3	20	20	60	-	-	-	100
PEC	16041X3	Program Elective-III	3	-	-	3	3	-	-	3	20	20	60	-	-	-	100
PEC	16042X3	Program Elective-II and III Lab.	-	4	-	4	-	2	-	2	-	-	-	50	50	-	100
OE	06063XX	Open elective -IV *	-	-	2	2	-	-	2	2	-	-	50	-	-	-	50
Total			13	10	2	25	13	5	2	20	100	100	350	100	75	25	750

Domain Name	Program Elective Courses-II (PEC-II)		Program Elective Courses-III (PEC-III)	
	Course Code	Course name	Course Code	Course name
Artificial Intelligence and Data Science (AIDS)	1604112	Applied Machine Learning (AML)	1604113	Big Data Analytics (BDA)
Software System Development (SSD)	1604122	Systems and Application programming (SAP)	1604123	Embedded OS (EOS)
Computer Vision (CV)	1604132	Image Processing and Pattern Recognition (IPPR)	1604133	Human Computer Interaction (HCI)
Hybrid Computing (HC)	1604142	High Performance Computing (HPC)	1604143	GPU Programming (GP)
Web Technologies (WT)	1604152	Server Side Technologies (SST)	1604153	Full Stack Web Development Frameworks (FSWDF)
Cyber Security (CS)	1604162	Ethical Hacking and Cyber Security (EHCS)	1604163	Secure Software Development (SSD)

Multi-Disciplinary Minor (MDM)

			Teaching Scheme (Hours/Week)				Credits				Examination Scheme and Marks		
Sem	Course code	Name of the Course (Short forms)	L	P	T	Total	L	P	T	Total	Theory		
											CIE	ISE	ESE
											[20]	[20]	[60]
3	03051X1	MDM-1	2	-	-	2	2	-	-	2	20	20	60
3	03052X1	MDM-1 Tut	-	-	1	1	-	-	1	1	-	-	-
4	04051X2	MDM-2	2	-	-	2	2	-	-	2	20	20	60
4	04052X2	MDM-2 Lab	-	2	-	2	-	1	-	1	-	-	-
5	05051X3	MDM-3	2	-	-	2	2	-	-	2	20	20	60
5	05052X3	MDM-3 Lab	-	2	-	2	-	1	-	1	-	-	-
6	06051X4	MDM-4	2	-	-	2	2	-	-	2	20	20	60
6	06052X4	MDM-4 lab	-	2	-	2	-	1	-	1	-	-	-
8	08053X5	MDM-5	-	-	2	2	-	-	2	2	-	-	-
Total			8	6	3	17	8	3	3	14	80	80	240

Proposed Structure: Program Elective Courses (PEC)

			Teaching Scheme (Hours/Week)				Credits				Examination Scheme and Marks						
Sem	Course code	Name of the Course (Short forms)	L	P	T	To tal	L	P	T	Tot al	Theory			Practical			Total
											IS E	CI E	ES E	CI E	ESE		
											[20 l	[20 l	[60 l	T W	(P R)	(O R)	
5	15041X1	Program Elective-I	3	-	-	3	3	-	-	3	20	20	60	-	-	-	100
5	15042X1	Program Elective-I Lab	-	2	-	2	-	1	-	1	-	-	-	25	-	25	50
6	16041X2	Program Elective-II	3	-	-	3	3	-	-	3	20	20	60	-	-	-	100
6	16041X3	Program Elective-III	3	-	-	3	3	-	-	2	20	20	60	-	-	-	100
6	16042X3	Program Elective- II & III Lab	-	4	-	4	-	2	-	2	-	-	-	50	50	-	100
7	17041X4	Program Elective-IV	3	-	-	3	3	-	-	3	20	20	60	-	-	-	100
7	17042X4	Program Elective-IV Lab	-	4	-	4	-	2	-	2	-	-	-	25	25	-	50
7	17041X5	Program Elective-V	3	-	-	3	3	-	-	3	20	20	60	-	-	-	100
7	17042X5	Program Elective-V Lab	-	2	-	2	-	1	-	1	-	-	-	50	-	50	100
Total			15	12	-	27	15	6	-	20	100	100	300	150	75	75	800

List of Multi-Disciplinary Minor Domains

Sr. No.	Multi-Disciplinary Minor Domains	SY		TY		B-Tech	Offered to students of B.Tech Program
		MDM-1	MDM-2	MDM-3	MDM-4	MDM-5	
		Sem-III	Sem-IV	Sem-V	Sem-VI	Sem-VII/VIII	
MD1	Smart and Sustainable Systems (SSS)	Fundamentals of Smart and Sustainable Systems (FSSS) & Tut	IoT for Smart and Sustainable Systems (ISSS) & Lab	Data Analytics for Smart and Sustainable Systems (DASSS) & Lab	Security for Smart and Sustainable Systems (SSS) & Smart and Sustainable Systems Development (SSD) Lab	Smart and Sustainable System (SSD) (MOOC)	ALL
MD2	Financial Technology and Management (FTM)	Finance and Management (FM)	Fundamentals of Financial Engineering (FFE) & Tut	Banking, Financial Services and Insurance (BFSI) & Tut	Fundamentals of Stock Market (FSM) & Tut	Fintech: Foundations & Applications (FFA) & Tut	ALL
MD3	3D- Printing (3DP)	3D- Printing (3DP)	3D modeling and Design (3MD) & Lab	Fundamentals of Additive Manufacturing (FAM)& Lab	3D Printing Materials and Processes (3DPMP)	Industry 4.0 and Digital Manufacturing (IDM)	ALL
MD4	Electric Vehicles (EV)	Electric Vehicles (EV)	EV foundation – Principles and Concepts (EVPC) & Lab	Advanced Motor Technologies and Power Electronics for EV(AMT) & Lab	EV Powertrain Dynamics and Control System(PDC) Tut/Lab	Intelligent EV Systems: AI IoT and Automation(IEV)	ALL
MD5	Applied Mathematics for Engineering (AME)	Applied Mathematics for Engineering (AME)	Linear Algebra with Python & Lab	Statistical Techniques and Numerical Methods with R & Lab	Fuzzy Logic and Graph Theory with Matlab/Python & Lab	Optimization Techniques & Lab	ALL
MD6	Software Development (SD)	Software Development (SD)	Data Structures and Algorithms (DSA) & Lab	Object Oriented Programming (OOP) & Lab	Database and Management Systems (DBMS) & Lab	Web Development (WD) & Lab	E&TCE
MD7	Autonomous and Intelligent Systems (AIS)	Autonomous and Intelligent Systems (AIS)	Digital Systems and Organization (DSO) & Lab	Smart System Engineering (SSE) & Lab	Embedded IoT Systems (EIS) & Lab	Autonomous Systems (AS) & Lab	All except E&TCE
MD8	Embedded Systems- (ES)	Embedded Systems (ES)	Fundamental of Microcontroller (FM) & Lab	Embedded Processors –I (EP -I) & Lab	Microcontrollers and IoT (MI) & Lab	Embedded Systems and RTOS (ES-RTOS) & Lab	All Except E&TCE
MD9	AI & Machine Learning (AI-ML)	AI & Machine Learning (AI-ML)	Statistical Data Analysis & Lab	Machine Learning (ML) & Lab	Natural Language Processing (NLP) & Lab	Artificial Intelligence (AI) & Lab	E&CE

List of Program Elective Courses (PEC)

- Students can choose elective courses from a wide range of disciplines, promoting a holistic and interdisciplinary education.
- Electives can be selected from within the student's core discipline or from other fields, encouraging exploration and broadening of knowledge.
- The following six domains are considered for inclusion in the syllabus of the Department of CE:

Label	Domains of Program Elective Courses (PE)	Third Year			Final Year BTech	
		PEC-I	PEC- II	PEC-III	PEC-IV	PEC- V
1	Artificial Intelligence and Data Science (AIDS)	Foundations of Data Science (FDS)	Applied Machine Learning(AML)	Big Data Analytics (BDA)	Generative AI (GAI)	Agentic AI (AAI)
2	Software System Development (SSD)	File Systems Design & Rust Programming (FSDRP)	Systems and Application programming (SAP)	Embedded OS (EOS)	DevOps (DO)	MLOps (MLO)
3	Computer Vision (CV)	Computer Graphics and Gaming (CGG)	Image Processing and Pattern Recognition(IPPR)	Human Computer Interaction (HCI)	Augmented and Virtual Reality (AVR)	Applied Computer Vision (ACV)
4	Hybrid Computing (HC)	Parallel and Distributed Computing (PDC)	High Performance Computing(HPC)	GPU Programming (GP)	Edge Computing (EC)	Quantum Computing (QC)
5	Web Technologies (WT)	Client Side Technologies and Frameworks (CSTF)	Server Side Technologies (SST)	Full Stack Web Development Frameworks (FSWDF)	Web Application Security (WAS)	AI and Web Development (AIWD)
6	Cyber Security (CS)	Elementary Cryptography (ECG)	Ethical Hacking and Cyber Security (EHCS)	Secure Software Development(SSD)	Digital Forensic (DF)	Threat Analysis (TA)

L: lecture, **P:** Practical, **T:** Tutorial, **ISE:** In-Semester Examination, **CIE:** Continuous Internal Evaluation, **ESE:** End-Semester Examination, **TW:**Term work, **PR:** Practical Examination, **OR:** Oral Examination .

#: Tutorial or laboratory as applicable. MDLX-X: First X is basket number; Second X is course number in that basket, L, P, and T have usual meaning.

Refer Annexure-1 for MDM details.

\$: Students should choose any one course from Community Engagement project (CEP) /Field project (FP) /CCA prescribed in the syllabus at the start of semester.

***:** Open elective (OE) offered by online platforms such as SWAYAM/NPTEL, **Refer Annexure-II** for details.

