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

Department of Computer Engineering (CE)

Structure for Final Year B.Tech. (CE)
[Academic Year 2027-28 onwards]

Contents

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
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		Program Elective Course (PEC)	04
III.	Multidisciplinary courses (MC)	Multidisciplinary Minor (MDM)	05
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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

Department of CE, PICT - (Final Year B. Tech Structure)

Proposed Structure: Final Year B.Tech. (Semester - VII / VIII)

Semester -VII or VIII			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 [20]	ISE [20]	ESE [60]	CIE TW	ESE (PR)	(OR)	
RM	0712301	Research Methodology (RM) *	-	-	2	2	-	-	2	2	-	-	25	-	-	-	25
RM	0712302	Academic Research Writing (ARW)	-	-	1	1	-	-	1	1	-	-	-	25	-	-	25
PCC	1703119	Deep Learning (DL)	3	-	-	3	3	-	-	3	20	20	60	-	-	-	100
PCC	1703220	Deep Learning lab (DLL)	-	4	-	4	-	2	-	2	-	-	-	50	50	-	100
PEC	17041X4	Program Elective-IV	3	-	-	3	3	-	-	3	20	20	60	-	-	-	100
PEC	17042X4	Program Elective-IV Lab	-	4	-	4	-	2	-	2	-	-	-	25	25	-	50
PEC	17041X5	Program Elective-V	3	-	-	3	3	-	-	3	20	20	60	-	-	-	100
PEC	17042X5	Program Elective-V Lab	-	2	-	2	-	1	-	1	-	-	-	50	-	50	100
PRJ	07142201	Project work Phase-I/II	-	6	-	6	-	3	-	3	-	-	-	50	-	50	100
Total			9	16	3	28	9	8	3	20	60	60	205	200	75	100	700

Domain Name	Program Elective Courses-IV (PEC-IV)		Program Elective Courses-V (PEC-V)	
	Course Code	Course name	Course Code	Course name
Artificial Intelligence and Data Science (AIDS)	1704114	Generative AI (GAI)	1704115	Agentic AI (AAI)
Software System Development (SSD)	1704124	DevOps (DO)	1704125	MLOps (MLO)
Computer Vision (CV)	1704134	Augmented and Virtual Reality (AVR)	1704135	Applied Computer Vision (ACV)
Hybrid Computing (HC)	1704144	Edge Computing (EC)	1704145	Quantum Computing (QC)
Web Technologies (WT)	1704154	Web Application Security (WAS)	1704155	AI and Web development (AIWD)
Cyber Security (CS)	1704164	Digital Forensic (DF)	1704165	Threat Analysis (TA)

Final Year B.Tech. (Semester - VII / VIII)

Semester- VII or VIII			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 [20]	ISE [20]	ESE [60]	CIE TW	ESE (PR)	ESE (OR)	
IP	0815201	Internship/ On Job training	-	22	-	22	-	11	-	11	-	-	-	150	-	100	250
MDM	08053X5	MDM - 5 #	-	-	2	2	-	-	2	2	-	-	-	50	-	-	50
PRJ	08142202	Project Work Phase-II/I	-	6	-	6	-	3	-	3	-	-	-	50	-	50	100
Total			-	28	2	30	-	14	2	16	-	-	-	250	-	150	400

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.

#: 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.

Multi-Disciplinary Minor (MDM)

Sem	Course code	Name of the Course (Short forms)	L	P	T	Total	L	P	T	Total	Theory		
											CIE [20]	ISE [20]	ESE [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

Program Elective Courses (PEC)

Sem	Course code	Name of the Course (Short forms)	L	P	T	Total	L	P	T	Total	ISE [20]	CIE [20]	ESE [60]	CIE TW	ESE (PR)	ESE (OR)	Total
			Teaching Scheme (Hours/Week)				**Credits**				**Examination Scheme and Marks**						
											Theory			**Practical**			
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)