Society for Computer Technology & Research's (SCTR's)

Pune Institute of Computer Technology (PICT), Pune

An Autonomous Institute affiliated to the Savitribai Phule Pune University (SPPU)
Approved by AICTE & Government of Maharashtra,
Accredited by NAAC (A+) & NBA [All eligible UG Programs]

Syllabus Structure for
T.Y B. Tech Electronics and Computer Engineering (E&CE)
(A.Y. 2026-2027 onwards) *

With effect from (June 25)
National Education Policy (NEP) 2020 Compliant
*Approved by the Board of Studies (BoS) and Academic Council

Abbreviations used (Refer [1-3] for more details)

Sr. No.	Broad Category of the course	Sub- Category of course	Category Code
I.	Basic Science/ Engineering Science Course (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)	13
		Project (PRJ)	14
		Internship/ On Job Training (IP/OJT)	15
VII.	Liberal Learning Courses (LLC)	Co-curricular Activities (CCA)	16

Detailed guidelines for General Instructions:

Link: General Instructions

Detailed guidelines for Evaluation and Assessment:

Link: Guidelines for Evaluation and Assessment

Detailed guidelines for examination:

Link: Guidelines for examination

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T.Y B. Tech Syllabus Structure
Semester – V

Category of Course	Course code	Name of the Course	L	P	T	Total	L	P	T	Total	ISE [20]	CIE [20]	ESE [60]	TW	P	OR	Total
Semester -5			**Teaching Scheme (Hours/Week)**				**Credit scheme**				**Examination/ Evaluation Scheme and Marks**						
											Theory			**Practical**			
PCC	5503111	Computer Networks (CN)	3	-	-	**3**	3	-	-	**3**	20	20	60	-	-	-	**100**
PCC	5503212	Computer Networks Lab (CNL)	-	2	-	**2**	-	1	-	**1**	-	-	-	-	-	25	**25**
PCC	5503113	Database Management System (DBMS)	3	-	-	**3**	3	-	-	**3**	20	20	60	-	-	-	**100**
PCC	5503214	Database Management System Lab (DBMSL)	-	2	-	**2**	-	1	-	**1**	-	-	-	-	50	-	**50**
PCC	5503115	Embedded System (ES)	2	-	-	**2**	2	-	-	**2**	20	20	60	-	-	-	**100**
PCC	5503216	Embedded System lab (ESL)	-	2	-	**2**	-	1	-	**1**	-	-	-	-	25	-	**25**
MDM	05051X3	MDM 3	2	-	-	**2**	2	-	-	**2**	20	20	60	-	-	-	**100**
MDM	05052X3	MDM 3 Lab	-	2	-	**2**	-	1	-	**1**	-	-	-	25	-	-	**25**
PEC	55041X1	Program Elective-I	2	-	-	**2**	2	-	-	**2**	20	20	60	-	-	-	**100**
PEC	55042X1	Program Elective-I Lab	-	2	-	**2**	-	1	-	**1**	-	-	-	25	-	25	**50**
AEC	0508204	Leadership and Management Skills (LMS)	-	2	-	**2**	-	1	-	**1**	-	-	-	25	-	-	**25**
OE	05063XX	**Open Elective-3** *	-	-	2	**2**	-	-	2	**2**	-	-	50	-	-	-	**50**
		Total	12	12	2	**26**	12	6	2	**20**	100	100	350	75	75	50	**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 annexture-1 for MDM details.

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

Program Elective Courses-I (PEC-1)

Domain Name	Course Code	Course name
Electronics (E)	5504111	Mechatronics (MECHX) and Lab
Computers (C)	5504121	Web Development and Lab
Emerging Trends (ET)	5504131	Micro Electro Mechanical System (MEMS) and Lab
Advance Data Science (ADS)	5504141	Big Data Analytics (BDA) and Lab
Cyber Security (CS)	5504151	Security and Privacy (SP) and Lab

T.Y. B. Tech, Semester - VI

Category of Course	Course code	Name of the Course	Teaching Scheme (Hours/Week)				Credit scheme				Examination/ Evaluation Scheme and Marks						Total
											Theory			Practical			
			L	P	T	Total	L	P	T	Total	ISE	CIE	ESE	CIE	ESE		Total
											[20]	[20]	[60]	TW	P	OR	
PCC	5603117	Theory of Computation (ToC)	2	-	1	3	2	-	1	3	20	20	60	25	-	-	125
PCC	5603118	Design and Analysis of Algorithm (DAA)	3	-	-	3	3	-	-	3	20	20	60	-	-	-	100
PCC	5603219	Design and Analysis of Algorithm Lab (DAAL)	-	2	-	2	-	1	-	1	-	-	-	-	50	-	50
PCC	5603120	Internet of Things (IoT)	2	-	-	2	2	-	-	2	20	20	60	-	-	-	100
PCC	5603221	Internet of Things Lab (IoTL)	-	2	-	2	-	1	-	1	-	-	-	-	-	25	25
MDM	06051X4	MDM 4	2	-	-	2	2	-	-	2	20	20	60	-	-	-	100
MDM	06052X4	MDM 4 Lab	-	2	-	2	-	1	-	1	-	-	-	25	-	-	25
VSEC	5607202	Mini project/seminar	-	4	-	4	-	2	-	2	-	-	-	-	-	50	50
PEC	56041X2	Program Elective-II	2	-	-	2	2	-	-	2	20	20	60	-	-	-	100
PEC	56042X2	Program Elective-II Lab	-	2	-	2	-	1	-	1	-	-	-	25	-	-	25
OE	06063XX	**Open Elective-4 ***	-	-	2	2	-	-	2	2	-	-	50	-	-	-	50
		Total	11	12	3	26	11	6	3	20	100	100	350	100	75	75	750

Program Elective Courses-II (PEC-II)

Domain Name	Course Code	Course name
Electronics (E)	5604112	Sensors and Actuators (SA)
Computers (C)	5604122	Compiler Construction (CC)
Emerging Trends (ET)	5604132	Augmented and Virtual Reality (AVR)
Advance Data Science (ADS)	5604142	Generative AI (GAI)
Cyber Security (CS)	5604152	Computer Forensic and Data Recovery (CFDR)

Annexures

⬆ Annexure-I

Structure of Multi-Disciplinary Minor Courses

The structure for the multidisciplinary Minor courses is as follows.

Sem	Course code	Name of Course	Teaching Scheme (Hours/Week)				Credits				Examination Scheme and Marks						
			L	P	T	Total	L	P	T	Total credits	Theory			Practical			Semester
											CIE	ISE	ESE	CIE	ESE		Total
											[20]	[20]	[60]	TW	P	OR	550
3	03051X1	MDM-1	2	-	-	2	2	-	-	2	20	20	60	-	-	-	100
3	03052X1	MDM-1 #	-	2	-	2	-	1	-	1	-	-	-	-	-	25	25
4	04051X2	MDM-2	2	-	-	2	2	-	-	2	20	20	60	-	-	-	100
4	04052X2	MDM-2 #	-	2	-	2	-	1	-	1	-	-	-	25	-	-	25
5	05051X3	MDM-3	2	-	-	2	2	-	-	2	20	20	60	-	-	-	100
5	05052X3	MDM-3 #	-	2	-	2	-	1	-	1	-	-	-	25	-	-	25
6	06051X4	MDM-4	2	-	-	2	2	-	-	2	20	20	60	-	-	-	100
6	06052X4	MDM-4 #	-	2	-	2	-	1	-	1	-	-	-	25	-	-	25
8	08053X5	MDM-5	-	-	2	2	-	-	2	2	-	-	-	50	-	-	50
		Total	8	8	2	18	8	4	2	14	80	80	240	125	0	25	550

Note: In course code X is basket number. #: is laboratory or tutorial as per course requirements.

1. Students are expected to choose one of the eligible domains of MDM at the beginning of the Semester III.
2. Students will complete the chosen set of all multidisciplinary minor courses mentioned under the chosen MDM domain.
3. Students are not permitted to change from one domain to another.
4. Refer to the last column of following table for eligibility to choose a particular MDM domain.

Lis of Multi-Disciplinary Minor Domains

Label	Multi-Disciplinary Minor Domains	SY		TY		B-Tech	Offered to students of B Tech Program
		MD1-1	MD2-2	MD3-3	MD4-4	MD5-5	
		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&S) Smart and Sustainable System Development (SSD) Lab	Smart and Sustainable System Development (SSD)	**ALL**
MD2	**Finance and Management (F&M)**	Fundamentals of Financial Engineering (FFE) & Tut	Banking, Financial Services and Insurance (BFSI) &Tut	Fundamentals of Stock Market (FSM) &Tut	Fintech: Foundations & Applications (FFA) &Tut	Financial Derivatives & Risk Management (FDRM)	**ALL**
MD3	**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)	Applied 3D Printing and Prototyping Lab (A3DPPL)	**ALL**
MD4	**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)	Capstone Project in Electric Mobility	**ALL**
MD5	**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	Field Study/Case Study	**ALL**
MD6	**Software Development (SD)**	Data Structures and Algorithms (DSA) & Lab	Object Oriented Programming (OOP) &Lab	Database and Management Systems (DBMS) & Lab	Web Development (WD) & Lab	System Programming and Operating System (SPOS)	**Only E&TCE**
MD7	**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	Cyber Physical Systems: Screen Mode (CPS) / Capstone Project	**All except E&TCE**
MD8	**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	Capstone Project using Microcontrollers lab (CPML)	**All Except E&TCE**
MD9	**AI & Machine Learning (AI-ML)**	Statistical Data Analysis & Lab	Machine Learning (ML) & Lab	Natural Language Processing (NLP) & Lab	Artificial Intelligence (AI) & Lab	Deep Learning (DL)	**Only E&CE**

Link: **Detailed Syllabus**

Annexure -II

Guidelines for Open elective Courses

1. Open Elective – I will be offered in third semester as foreign language as prescribed in the structure.

2. Open Electives – II, III, IV will be offered through SWAYAM/NPTEL MOOCs of Equivalent Credits.

3. Departments shall prepare the baskets of open elective courses from discipline/faculty other than respective major programs. Students may choose any course from the basket without adhering to any one stream.

4. Credits & Grade will be awarded based on the Marks Obtained through the certification including assignments and proctored examination as per the MOOCs Policy.

Sem	Course code	Name of the Course	Teaching Scheme (Hours/Week)				Credits				Examination Scheme and Marks						Total
											Theory			Practical			
			L	P	T	Total	L	P	T	Total	CIE [20]	ISE [20]	ESE [60]	CIE TW	P	ESE OR	
3	OE-I	Foreign Language Studies (FLS)	-	-	2	2	-	-	2	2	-	-	-	50	-	-	50
4	OE-II	MOOCs	-	-	2	2	-	-	2	2			50	-	-	-	50
5	OE-III	MOOCs	-	-	2	2	-	-	2	2	-	-	50	-	-	-	50
6	OE-IV	MOOCs	-	-	2	2	-	-	2	2	-	-	50	-	-	-	50

Guidelines for MOOCs

1. The department shall release a list of approved SWAYAM-NPTEL courses before the commencement of every semester.
2. Students shall register for the approved Courses as per the schedule announced by SWAYAM-NPTEL.
3. A student shall undergo the courses only from the list notified by the department through SWAYAM/NPTEL platform and complete all the assignments and examination requirements as specified by SWAYAM/NPTEL.
4. SWAYAM-NPTEL Courses are considered for transfer of credits only if the student concerned has successfully completed and obtained the SWAYAM-NPTEL Certificate.
5. The credit equivalence for SWAYAM-NPTEL Courses: 12 weeks – 3credits; 8 weeks – 2 credits; 4 weeks – 1 credit.
6. Equivalent marks will be considered for awarding the grades as specified in examination rules and regulations. The weightage for assignments is 40%, while the weightage for the proctored examination will be 60% for award calculating SGPA/CGPA. Students must score a minimum of 40% of the total marks by combining both assignments and proctored examinations

7. A student must submit the original SWAYAM-NPTEL Course Certificates to the Head of the Department concerned, with a written request for the transfer of the equivalent credits. On verification of the SWAYAM-NPTEL Course Certificates and approval by the head of the department, credits will be awarded.

8. The Institute shall not reimburse any fees/expenses a student may incur for the SWAYAM-NPTEL Courses.

9. If the SWAYAM/NPTEL course calendar does not align with the institute's calendar, the department shall facilitate and conduct examination of the relevant course of equivalent credits in physical/virtual mode and award the credits accordingly.