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. Information Technology (IT)
(2026-27 Course) *

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

Index

Contents

Third Year B. Tech. Curriculum Structure (Semester - V) with effect from the A.Y. 2026-27

Course Type	Course code	Name of the Course	L	P	T	Total	L	P	T	Total	CIE [20]	ISE [20]	ESE [60]	CIE TW	ESE P	ESE OR	Sem. Total
PCC	3503110	Theory of Computation and Compiler (ToCC)	3	-	-	**3**	3	-	-	**3**	20	20	60	-	-	-	**100**
PCC	3503111	Operating Systems (OS)	3	-	-	**3**	3	-	-	**3**	20	20	60	-	-	-	**100**
PCC	3503112	Artificial Intelligence and Machine Learning (AIML)	3	-	-	**3**	3	-	-	**3**	20	20	60	-	-	-	**100**
PCC	3503213	Operating System Laboratory (OSL)	-	2	-	**2**	-	1	-	**1**	-	-	-	25	25	-	**50**
PCC	3503214	Artificial Intelligence and Machine Learning Lab. (AIMLL)	-	2	-	**2**	-	1	-	**1**	-	-	-	25	25	-	**50**
PEC	35041X1	Program Elective-I (PEC-I)	2	-	-	**2**	2	-	-	**2**	20	20	60	-	-	-	**100**
PEC	35042X1	Program Elective-I Lab. (PECL-I)	-	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**
OE	05063XX	Open Elective-III *(OE-III)	-	-	2	**2**	-	-	2	**2**	-	-	50	-	-	-	**50**
AEC	0508204	Leadership and Management Skills (LMS)	-	2	-	**2**	-	1	-	**1**	-	-	-	25	-	-	**25**
		Total	**13**	**10**	**2**	**25**	**13**	**5**	**2**	**20**	**100**	**100**	**350**	**125**	**50**	**25**	**750**

L: Lecture, P: Practical, T: Tutorial, CIE: Continuous Internal Evaluation, ISE: In-Semester Examination, ESE: End-Semester Examination,

TW: Term work, OR: Oral, P: Practical examination

Program Elective Courses-I (PEC-1):

Domain Name	Course Code	Course Name
Network and Cyber Security	3504111 & 3504211	Introduction to Cyber Security (ICS) & Lab.
Intelligent Systems	3504121 & 3504221	Deep and Reinforcement Learning (DRL) & Lab.
Databases and Web Technologies	3504131 & 3504231	Web Development Frameworks (WDF) & Lab.
Advanced Cloud Computing	3504141 & 3504241	Cloud Computing and Virtualization (CCV) & Lab.
Computer Graphics and Interactive Systems	3504151 & 3504251	Computer Graphics and Multimedia Systems (CGMS) & Lab.

Third Year B. Tech. Curriculum Structure (Semester - V) with effect from the A.Y. 2026-27

Course Type	Course code	Name of the Course	L	P	T	Total	L	P	T	Total	CIE [20]	ISE [20]	ESE [60]	CIE (TW)	ESE (P)	ESE (OR)	Sem. Total
PCC	3603115	Design and Analysis of Algorithms (DAA)	2	-	-	2	2	-	-	2	20	20	60	-	-	-	100
PCC	3603116	DevOps for Scalable Systems (DOSS)	2	-	-	2	2	-	-	2	20	20	60	-	-	-	100
PCC	3603217	IT Lab. - I (DAA + DOSS)	-	4	-	4	-	2	-	2	-	-	-	25	25	-	50
PEC	36041X2	Program Elective-II (PEC-II)	3	-	-	3	3	-	-	3	20	20	60	-	-	-	100
PEC	36041X3	Program Elective-III (PEC-III)	3	-	-	3	3	-	-	3	20	20	60	-	-	-	100
PEC	36042X2	Program Elective-II Lab. (PECL-II)	-	2	-	2	-	1	-	1	-	-	-	25	-	25	50
PEC	36042X3	Program Elective-III Lab. (PECL-III)	-	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
OE	06063XX	Open Elective-IV *(OE-IV)	-	-	2	2	-	-	2	2	-	-	50	-	-	-	50
VSEC	3407202	Seminar (Sem)	-	-	1	1	-	-	1	1	-	-	-	25	-	-	25
		Total	12	10	3	25	12	5	3	20	100	100	350	125	25	50	750

#: Tutorial or laboratory as applicable. Choose one course from the MDM baskets. MDM: X is basket number, **Refer annexure-I** for MDM details.

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

X: Serial number of the courses under that particular category.

Domain Name	Course Code	Program Elective Courses-II (PEC-II) Course Name	Course Code	Program Elective Courses-III (PEC-III) Course Name
Network and Cyber Security	3604112 & 3604212	Advanced Network Security Mechanisms (ANSM) & Lab.	3604113 & 3604213	Cryptographic and Blockchain Techniques (CBT) & Lab.
Intelligent Systems	3604122 & 3604222	Computer Vision (CV) & Lab.	3604123 & 3604223	Scalable AI (SAI) & Lab.
Databases and Web Technologies	3604132 & 3604232	Modern Databases and Scalable Architectures (MDSA) & Lab.	3604133 & 3604233	API-Driven Development & Microservices (ADM) & Lab.
Advanced Cloud Computing	3604142 & 3604242	Cloud-Native Application Development (CAD) & Lab.	3604143 & 3604243	Cloud Storage and Data Management (CSDM) & Lab.
Computer Graphics and Interactive Systems	3604152 & 3604252	Interface Design and Usability Engineering (IDUE) & Lab.	3604153 & 3604253	Virtual and Augmented Reality (VAR) & Lab.

Annexures

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	150	0	0	**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.

List 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
			L	P	T	Total	L	P	T	Total	Theory			Practical			
											CIE	ISE	ESE	CIE	ESE		
											[20]	[20]	[60]	TW	P	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.