



APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

(A State Government University)

B. Tech

Curriculum- Semester I to VIII

Information Technology

Branch Code: IT

(Group A)

Ambady Nagar, Sreekaryam

Thiruvananthapuram- 695016

FIRST SEMESTER (July-December): Group A														
10 Days Compulsory Induction Program and UHV														
Sl. No:	Slot	Course Code	Course Type	Course Category	Course Title	Credit Structure				SS	Total Marks		Credits	Hrs./Week
						L	T	P	R		CIA	ESE		
1	A	GAMAT101	BSC	GC	Mathematics for Information Science-1	3	0	0	0	4.5	40	60	3	3
	B S1/ S2	GAPHT121	BSC	GC	Physics for Information Science	3	0	2	0	5.5	40	60	4	5
		GXCYT122			Chemistry for Information Science									
3	C	GMEST103	ESC	GC	Engineering Graphics and Computer Aided Drawing.	2	0	2	0	4	40	60	3	4
4	D	GXEST104	ESC	GC	Introduction to Electrical & Electronics Engineering (Part 1: Electrical Engineering)	2	0	0	0	3	20	30	2+2=4	4
					(Part 2: Electronics Engineering)	2	0	0	0	3	20	30		
5	F	UCEST105	ESC	UC	Algorithmic Thinking with Python	3	0	2	0	5.5	40	60	4	5
6	L	GXESL106	ESC	GC	Basic Electrical and Electronics Engineering Workshop	0	0	2	0	1	50	50	1	2
7	I* S1/S2	UCHWT127	HWP	UC	Health and Wellness	1	0	1	0	0	50	0	1	2/3
		UCHUT128	HMC		Life Skills and Professional Communication	2	0	1	0	3.5	100	0		
8	S1/ S2	UCSEM129	SEC	UC	Skill Enhancement Course: Digital 101(NASSCOM)	MOOC				2			-	
Total									30/ 32			20	25/ 26	

Bridge Course (Mathematics or Introduction to Computer Science)*: Total 15 Hrs.

*Valuation for HMC courses will be done at college level, Question papers will be provided by the University.

*No Grade Points will be awarded for the MOOC course and I slot course.

- L-T-P-R: Lecture-Tutorial-Practical-Project
- SS (Self Study) Hours= 1.5L+0.5 T+0.5P+R
- CIA: Continuous Internal Assessment, ESE: End Semester Examination

Digital 101 (NASSCOM)		
Sl. No:	Technologies Covered	Hours
1	Artificial intelligence and Big Data Analytics (AI/BDA)	11
2	Internet of Things (IoT)	2.5
3	Cyber Security	2.5
4	Block Chain	2.5
5	Robotic Process Automation	1.5
6	Augmented Reality and Virtual Reality (AR and VR)	2.5
7	Cloud Computing	2.5
8	3 D Printing and Modelling	2
9	Web, Mobile Dev and Marketing	2
10	Responsible AI	1
Total Hours		30

Note: Physics, Chemistry, Health and Wellness & Life Skill and Professional Communication can be offered in both Semester 1 (S1) and Semester 2 (S2). Institutions are encouraged to guide approximately 50% of their branches to choose between Physics or Chemistry (Slot B) and Health and Wellness or Life Skill and Professional Communication (Slot I) in Semester 1.

SECOND SEMESTER (January-June): Group A														
Sl. No:	Slot	Course Code	Course Type	Course Category	Course Title	Credit Structure				SS	Total Marks		Credits	Hrs./Week
						L	T	P	R		CIA	ESE		
1	A	GAMAT201	BSC	GC	Mathematics for Information Science-2	3	0	0	0	4.5	40	60	3	3
2	B S1/ S2	GAPHT121	BSC	GC	Physics for Information Science	3	0	2	0	5.5	40	60	4	5
		GXCYT122			Chemistry for Information Science									
3	C	GXEST203	ESC	GC	Foundations of Computing: From Hardware Essentials to Web Design	3	0	0	0	4.5	40	60	3	3
4	D	GXEST204	ESC	GC	Programming in C	3	0	2	0	5.5	40	60	4	5
5	E	PCITT205	PC	PC	Discrete Mathematical Structures	3	1	0	0	5	40	60	4	4
6	F	UCEST206	ESC	UC	Engineering Entrepreneurship & IPR	3	0	0	0	4.5	60	40	3	3
7	I* S1/ S2	UCHWT127	HWP	UC	Health and wellness	1	0	1	0	0	50	0	1	2/3
		UCHUT128	HMC		Life Skills and Professional Communication	2	0	1	0	3.5	100	0		
8	L	GXESL208	ESC	GC	IT Workshop	0	0	2	0	1	50	50	1	2
9	S1/ S2	UCSEM129	SEC	UC	Skill Enhancement Course: Digital 101(NASSCOM)	MOOC							1	
Total										34			24	27/ 28

***No Grade Points Will be awarded for the MOOC Course and I Slot Course**

Skill Enhancement Course: Digital 101 is an introductory Massive Open Online Course (MOOC) offered by NASSCOM. It is designed to provide students with foundational knowledge and skills in digital technologies, preparing them for further studies and careers in the digital domain. By incorporating the Digital 101 course into the curriculum, KTU ensures that all students gain valuable digital skills early in their academic journey, enhancing their readiness for advanced courses and future careers in technology.

Course Registration and Completion:

- Students have the flexibility to register and complete the Digital 101 course either in their first semester (S1) or second semester (S2).
- The credit for this course (1 credit) will be officially recorded in the second semester grade card.

THIRD SEMESTER (July-December)														
Sl. No:	Slot	Course Code	Course Type	Course Category	Course Title	Credit Structure				SS	Total Marks		Credits	Hrs./ Week
						L	T	P	R		CIA	ESE		
1	A	GAMAT301	BSC	GC	Mathematics for Information Science-3	3	0	0	0	4.5	40	60	3	3
2	B	PCITT302	PC	PC	Computer Organisation and Architecture	3	1	0	0	5	40	60	4	4
3	C	PCITT303	PC	PC	Data structures	3	1	0	0	5	40	60	4	4
4	D	PBITT304	PC-PBL	PB	Database Management System	3	0	0	1	5.5	60	40	4	4
5	F	GAEST305	ESC	GC	Digital Electronics & Logic Design	3	1	0	0	5	40	60	4	4
6	G S3/S4	UCHUT346	HMC	UC	Engineering Economics	2	0	0	0	3	50	50	2	2
		UCHUT347			Engineering Ethics and Sustainable Development									
7	L	PCITL307	PCL	PC	Programming in Python Lab	0	0	3	0	1.5	50	50	2	3
8	Q	PCITL308	PCL	PC	Data structures Lab	0	0	3	0	1.5	50	50	2	3
9	R/M		VAC		Remedial/Minor Course	3	1	0	0	5			4*	4*
Total									31/36		25/29*	27/31*		
Bridge Course for Lateral Entry Students: Total 15 Hrs.														

FOURTH SEMESTER (January-June)														
Sl. No:	Slot	Course Code	Course Type	Course Category	Course Title	Credit Structure				SS	Total Marks		Credits	Hrs./ Week
						L	T	P	R		CIA	ESE		
1	A	GAMAT401	BSC	GC	Mathematics for Information Science-4	3	0	0	0	4.5	40	60	3	3
2	B	PCITT402	PC	PC	Computer Networks	3	1	0	0	5	40	60	4	4
3	C	PCITT403	PC	PC	Operating Systems	3	1	0	0	5	40	60	4	4
4	D	PBITT404	PC-PBL	PB	Data Science	3	0	0	1	5.5	60	40	4	4
5	E	PEITT41N	PE	PE	Programme Elective -1	3	0	0	0	4.5	40	60	3	3
6	G S3/S4	UCHUT346	HMC*	UC	Economics for Engineers	2	0	0	0	3	50	50	2	2
		UCHUT347			Engineering Ethics and Sustainable Development									
7	L	PCITL407	PCL	PC	Computer Networks Lab	0	0	3	0	1.5	50	50	2	3
8	Q	PCITL408	PCL	PC	Operating Systems Lab	0	0	3	0	1.5	50	50	2	3
9	R/M /H		VAC		Remedial/Minor/Honours Course	3	1	0	0	5			4*	4*
Total										31/ 36			24/ 28*	26/ 30*

*Valuation for HMC courses will be done at college level, Question papers will be provided by the University.

Note: Engineering Economics and Engineering Ethics and Sustainable Development shall be offered in both S3 and S4. Institutions can advise students belonging to about 50% of the number of branches in the Institution to opt for Engineering Economics in S3 and Engineering Ethics & Sustainable Development in S4 and vice versa.

PROGRAMME ELECTIVE I: PEITT41N

Slot	Course Code	Course Title	L-T-P-R	Hours	Credit
E	PEITT 411	Object Oriented Design using JAVA	2-0-1-0	3	3
	PEITT 412	Data Communication and Networking	3-0-0-0		3
	PEITT 413	Foundations of Security	3-0-0-0		3
	PEITT 414	Computer Graphics	3-0-0-0		3
	PEITT 415	Operations Research	3-0-0-0		5/3

Note : Level 5 courses in the B. Tech curriculum carry a total of 5 credits, consisting of 3 credits for the Programme Elective and 2 additional credits. The additional 2 credits shall be awarded only if the student meets the eligibility conditions specified in the B. Tech. -2024 regulations. If those conditions are not fulfilled, the student will receive only 3 credits for the course.

FIFTH SEMESTER (July-December)														
Sl. No:	Slot	Course Code	Course Type	Course Category	Course Title	Credit Structure				SS	Total Marks		Credits	Hrs./ Week
						L	T	P	R		CIA	ESE		
1	A	PCITT501	PC	PC	Machine Learning	3	1	0	0	5	40	60	4	4
2	B	PCITT502	PC	PC	Algorithm Analysis and Design	3	1	0	0	5	40	60	4	4
3	C	PCITT503	PC	PC	Software Engineering	3	0	0	0	4.5	40	60	3	3
4	D	PBITT504	PC-PBL	PB	Web Application Development	3	0	0	1	5.5	60	40	4	4
5	E	PEITT52N	PE	PE	Programme Elective -2	3	0	0	0	4.5	40	60	3	3
6	I*	UCHUM506	HMC	UC	Constitution Of India (MOOC)	-	-	-	-	2	-	-	1	-
7	L	PCITL507	PCL	PC	Machine Learning Lab	0	0	3	0	1.5	50	50	2	3
8	Q	PCITL508	PCL	PC	Algorithm Analysis and Design Lab	0	0	3	0	1.5	50	50	2	3
9	R/M/H		VAC		Remedial/Minor/Honours Course	3	1	0	0	5	-	-	4*	4*
	S ₅ /S ₆	Industrial Visit (Maximum 12 Days are permitted, Not Exceeding more than 6 Working Days) /Industrial Training												
Total										30 / 35			23/27*	24/28*

*No Grade Points will be awarded for the MOOC course and I slot course.

Industrial Training:

Students who are not participating in the industrial visit must attend industrial training during that period.

PROGRAMME ELECTIVE 2: PEITT52N

Slot	Course Code	Course Title	L-T-P-R	Hours	Credit
E	PEITT521	Soft Computing	3-0-0-0	3	3
	PEITT522	Internetworking using TCP/IP	3-0-0-0		3
	PEITT523	Cloud Computing	3-0-0-0		3
	PEITT524	Data Mining and Warehousing	3-0-0-0		3
	PEITT525	Formal Languages and Automata Theory	3-0-0-0		5/3

SIXTH SEMESTER (January-June)														
Sl. No:	Slot	Course Code	Course Type	Course Category	Course Title	Credit Structure				SS	Total Marks		Credits	Hrs./ Week
						L	T	P	R		CIA	ESE		
1	A	PCITT601	PC	PC	Cryptography and Network Security	3	1	0	0	5	40	60	4	4
2	B	PCITT602	PC	PC	Advanced Artificial Intelligence	3	0	0	0	4.5	40	60	3	3
3	C	PEITT63N	PE	PE	Programme Elective -3	3	0	0	0	4.5	40	60	3	3
4	D	PBITT604	PC-PBL	PB	Internet of Things	3	0	0	1	5.5	60	40	4	4
5	F	GAEST605	ESC	GC	Design Thinking and Product Development (Group Specific Syllabus)	2	0	0	0	3	40	60	2	2
6	O	OEITT61N /IEITT61N	OE/ILE	OE/IE	OE/ILE-1	3	0	0	0	4.5	40	60	3	3
7	L	PCITL607	PCL	PC	Network Security Lab	0	0	3	0	1.5	50	50	2	3
8	P	PCITP608	PWS	PC	Mini Project: Socially Relevant Project	0	0	0	3	3	50	50	2	3
9	R/ M/ H		VAC		Remedial/Minor/Honours Course	3	0	0	0	4.5			3*	3*
	S5 / S6	Industrial Visit (Maximum 12 Days are permitted, Not exceeding more than 6 Working Days) /Industrial Training												
Total										32 / 36			23/26*	25/28*

Note: Open Electives are such courses which will be offered by other departments. Like CSE department students have to opt open electives from ECE/ME/EEE etc. departments.

Industrial Training:

Students who are not participating in the industrial visit must attend industrial training during that period.

PROGRAMME ELECTIVE 3: PEITT63N

Slot	Course Code	Course Title	L-T-P-R	Hours	Credit
C	PEITT631	Compiler Design	3-0-0-0	3	3
	PEITT632	Meta Heuristic Optimization	3-0-0-0		3
	PEITT633	Software Project Management	3-0-0-0		3
	PEITT634	Quantum Computing	3-0-0-0		3
	PEITT635	Data Analytics	3-0-0-0		5/3

OPEN ELECTIVE 1: OEITT61N

Slot	Course Code	Course Title	L-T-P-R	Hours	Credit
O	OEITT611	Object Oriented Programming using JAVA	3-0-0-0	3	3
	OEITT612	Data Structures using C++	3-0-0-0		3
	OEITT613	AI with Python	3-0-0-0		3

SEVENTH SEMESTER (July-December)														
Sl. No:	Slot	Course Code	Course Type	Course Category	Course Title	Credit Structure				SS	Total Marks		Credits	Hrs./Week
						L	T	P	R		CIA	ESE		
1	A	PEITT74N/ PEITM74N	PE	PE	Programme Elective -4 (Internship Students: Self Study/MOOC Approved by the University/Online Classes)	3	0	0	0	4.5	40	60	3	3
2	B	PEITT75N/ PEITM75N	PE	PE	Programme Elective -5 (Internship Students: Self Study/MOOC Approved by the University/Online Classes)	3	0	0	0	4.5	40	60	3	3
3	O	OEITT72N/ IEITT72N/ OEITM72N	OE/ ILE	OE/IE	OE/ILE-2 (Internship Students: Self Study/MOOC Approved by the University/Online Classes)	3	0	0	0	4.5	40	60	3	3
4	I#	UEHUT704/ UEHUM70N	HMC	UE	Elective (Internship Students: Self Study/MOOC Approved by the University/Online Classes)	2	0	0	0	3	50	50	2	2
5	S	PCITS705	PWS	PC	Seminar	0	0	3	0	1.5	50	0	2	3
6	P	PCITP706/ PCITI706	PWS	PC	*Option 1: Major Project *Option 2: Internship (4-6 Months)	0	0	0	8	8	100	0	4	8
7	R/H		VAC		Remedial/Honours Course	3	0	0	0	4.5			3*	3*
Total										26/ 31			17/20*	22/25*

#No Grade Points will be awarded for the I slot courses

*Students can opt for the internship either in the 7th or 8th semester.

*Option 1: Work on a Project in the institute/department under the mentorship of faculty members.

*Option 2: Full semester Internship in an Industry/organization (7th or 8th semester)

PROGRAMME ELECTIVE 4: PEITT74N

Slot	Course Code	Course Title	L-T-P-R	Hours	Credit
A	PEITT741	Natural Language Processing	3-0-0-0	3	3
	PEITT742	Software Development with Agile and DevOps	3-0-0-0		3
	PEITT743	Blockchain Technology	3-0-0-0		3
	PEITT744	Mobile App Development	2-0-1-0		3
	PEITT745	Deep Learning	3-0-0-0		5/3

PROGRAMME ELECTIVE 5: PEITT75N

Slot	Course Code	Course Title	L-T-P-R	Hours	Credit
B	PEITT751	Approximation Algorithms	3-0-0-0	3	3
	PEITT752	Software Quality Assurance	3-0-0-0		3
	PEITT753	Augmented and Virtual Reality	3-0-0-0		3
	PEITT754	Network Science	3-0-0-0		3
	PEITT755	Cyber and Network Forensics	3-0-0-0		5/3

OPEN ELECTIVE 2: OEITT72N

Slot	Course Code	Course Title	L-T-P-R	Hours	Credit
O	OEITT721	Machine Learning	3-0-0-0	3	3
	OEITT722	Data Science for Engineers	3-0-0-0		3
	OEITT723	Internet of Things	3-0-0-0		3

HMC ELECTIVE 1: UEHUT70N

Slot	Course Code	Slot I: HMC Elective
I	UEHUT704	Project Management: Planning, Execution, Evaluation and Control
	UEHUM701	Proficiency course in French (B1 level). (MOOC)
	UEHUM702	Proficiency Course in German (B1 Level). (MOOC)
	UEHUM703	Proficiency Course in Spanish (B1 Level) (MOOC)
	UEHUM704	Introduction to Japanese Language and Culture (N5 level). (MOOC)

EIGHT SEMESTER (January-June)														
Sl. No:	Slot	Course Code	Course Type	Course Category	Course Title	Credit Structure				SS	Total Marks		Credits	Hrs./Week
						L	T	P	R		CIA	ESE		
1	A	PEITT86N/ PEITM86N	PE	PE	Programme Elective -6 (Internship Students: Self Study/MOOC Approved by the University/Online Classes)	3	0	0	0	4.5	40	60	3	3
2	O	OEITT83N/ IEITT83N/ OEITM83N	OE/IL E	OE/IE	OE/ILE-3 (Internship Students: Self Study/MOOC Approved by the University/Online Classes)	3	0	0	0	4.5	40	60	3	3
3	I*	UEHUT803/ UEHUM803	HMC	UC	Organizational Behavior and Business Communication (Internship Students: Self Study/MOOC Approved by the University/Online Classes)	2	0	0	0	3	50	50	1	2
4	P	PCITP806/ PCITI806/ PCITJ806	PWS	PC	Option 1: Major Project Option 2: Internship (4-6 Months) Option 3: Major Project Phase-II (For the students who have not opted for internship in S7/S8)	0	0	0	8	8	100	0	4	8
Total									20			11	16	

*No Grade Points will be awarded for the I slot courses

* Option 2: Full semester Internship in an Industry/organization (7th or 8th semester)

PROGRAMME ELECTIVE 6: PEITT86N

Slot	Course Code	Course Title	L-T-P-R	Hours	Credit
A	PEITT861	Bioinformatics	3-0-0-0	3	3
	PEITT862	Software Testing	3-0-0-0		3
	PEITT863	Adhoc and Wireless Sensor Networks	3-0-0-0		3
	PEITT864	Semantic Web	3-0-0-0		3
	PEITT865	Robotics and Automation	3-0-0-0		5/3

OPEN ELECTIVE 3: OEITT83N

Slot	Course Code	Course Title	L-T-P-R	Hours	Credit
O	OEITT831	Computer Vision	3-0-0-0	3	3
	OEITT832	Deep Learning	3-0-0-0		3
	OEITT833	Web Designing	3-0-0-0		3

HMC Courses			
Sl. No:	Semester	Course Title	Credits
1	S1/S2	Life Skills and Professional Communication	1
2	S3/S4	Economics for Engineers	2
3		Engineering Ethics and Sustainable Development	2
4	S5	Constitution Of India. (MOOC)	1
5	S7	Elective (Project Management/Foreign Languages)	2
6	S8	Organizational Behavior and Business Communication	1
Total Credits			9

BSC Courses			
Sl. No:	Semester	Course Title	Credits
1	S1	Mathematics for Information Science-1	3
2	S1/S2	Physics for Information Science	4
3		Chemistry for Information Science	4
4	S2	Mathematics for Information Science-2	3
5	S3	Mathematics for Information Science-3	3
6	S4	Mathematics for Information Science-4	3
Total Credits			20

ESC Courses (Group A)			
Sl. No:	Semester	Course Title	Credits
1	S1	Engineering Graphics and Computer Aided Drawing	3
2		Introduction to Electrical and Electronics Engineering	4
3		Algorithmic Thinking with Python	4
4		Basic Electrical and Electronics Engineering Workshop	1
5	S2	Foundations of Computing: From Hardware Essentials to Web Design	3
6		Programming in C	4
7		Engineering Entrepreneurship and IPR	3
8		IT Workshop	1
9	S3	Digital Electronics & Logic Design	4
10	S6	Design Thinking and Product Development	2
Total Credits			29

Programme Core Courses(PC)			
Sl. No:	Semester	Course Title	Credits
1	S2	Discrete Mathematical Structures	4
2	S3	Computer Organisation and Architecture	4
3		Data structures	4
4		Programming in Python Lab	2
5		Data structures Lab	2
6	S4	Computer Networks	4
7		Operating Systems	4
8		Computer Networks Lab	2
9		Operating Systems Lab	2
10	S5	Machine Learning	4
11		Algorithm Analysis and Design	4
12		Software Engineering	3
13		Machine Learning Lab	2
14		Algorithm Analysis and Design Lab	2
15	S6	Cryptography and Network Security	4
16		Advanced Artificial Intelligence	3
17		Network Security Lab	2
Total Credits (Theory -10, Lab-7)			52

Programme Core-Project Based Learning (PBL)			
Sl. No:	Semester	Course Title	Credits
1	S3	Database Management System	4
2	S4	Data Science	4
3	S5	Web Application Development	4
4	S6	Internet of Things	4
Total Credits			16

Programme Elective Courses (PE)			
Sl. No:	Semester	Course Type	Credits
1	S4	PE-1	3
2	S5	PE-2	3
3	S6	PE-3	3
4	S7	PE-4	3
5		PE-5	3
6	S8	PE-6	3
Total Credits			18 to 30

Open Elective Courses/Industry Elective(OE/IEL)			
Sl. No:	Semester	Course Type	Credits
1	S6	OE/ILE-1	3
2	S7	OE/ILE-2	3
3	S8	OE/ILE-3	3
Total Credits			9

Project/Seminar			
Sl. No:	Semester	Course Type	Credits
1	S6	Mini Project	2
2	S7	Seminar	2
3		Major Project/Internship	4
4	S8	Major Project/Internship/Research Project	4
Total Credits			12

Activity Points				
Sl. No.	Group	Courses	Credits	Minimum Credit Requirements
1	I	NSS, NCC, NSO (National Sports Organization)	1 (40 Points)	3 Credits (One credit from each Group)
2		Arts/Sports/Games		
3		Union/Club Activities		
4	II	English Proficiency Certification (TOFEL, IELTS, BEC etc.)	1 (40 Points)	
5		Aptitude Proficiency Certification (GRE, CAT, GMAT etc.)/ Valid Gate Score.		
6		Short Term Internship (Minimum 2 weeks), Clinical Exposure/Training (Minimum 2 weeks), Conferences/Paper Presentation/ Workshop Activities/ Professional Body Activities, Participation in University level/State Level/ National Level Hackathons		
7	III	Journal Publication, Patents, Start-Up, Innovation, Winners of National/ International Level Hackathons	1 (40 Points)	
8		Skilling Certificates (Approved by the University)		

- *Students are required to acquire a minimum of 120 activity points, with at least 40 points per group, to fulfill the curriculum requirement of 3 activity credits.*
- *For B. Tech Lateral Entry students, 30 points per group are required. A minimum of 90 activity points must be acquired to obtain the 3 activity credits mandated by the curriculum.*

Course classifications of the B. Tech Programmes and Overall Credit Structure			
Sl. No	Category	Code	Credits
1	Humanities and Social Sciences including Management Courses	HMC	9
2	Basic Science Courses	BSC	20
3	Engineering Science Courses	ESC	29
4	Programme (Professional) Core Courses	PCC	52
5	Programme (Professional) Core Courses-Project Based Learning	PBL	16
6	Programme Elective Courses	PEC	18
7	Open Elective Courses/Industry Linked Elective	OEC/ILE	9
8	Mini Project,Project Work/Internship and Seminar	PWS	12
9	Health and Wellness	HWP	1
10	Skill Enhancement Courses (Digital 101)	SEC	1
11	Mandatory Student Activities	MSA	3
Total Credits			170