APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

(A State Government University)

B. Tech.

Curriculum - 2024

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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

(A State Government University)

Bachelor of Technology (B. Tech.)

Curriculum-2024

(Applicable to All B. Tech. Degree Programmes)

Ambady Nagar, Sreekaryam

Thiruvananthapuram- 695016

1. Grouping

APJ Abdul Kalam Technological University offers various engineering branches that can be grouped into four broad categories based on their specialization.

Group	Branches	
A **Computer and Information Science**	▪ Computer Science and Engineering ▪ Artificial Intelligence ▪ Computer Science and Engineering (Artificial Intelligence) ▪ Computer Science and Engineering (Artificial Intelligence and Machine Learning) ▪ AI and Machine Learning ▪ Artificial Intelligence and Data Science ▪ CS and Business Systems ▪ CS and Design ▪ Cyber Security	▪ Information Technology ▪ Computer Science and Engineering and Business Systems ▪ CSE (Data Science) ▪ CSE (Artificial Intelligence and Data Science) ▪ CSE (Internet of Things), CSE(IoT) ▪ CSE (Block Chain) ▪ CSE (Cyber Security) ▪ CSE (IoT and CS including Block Chain Technology)
B **Electrical Science**	▪ Electronics & Communication Engineering ▪ Electrical and Electronics Engineering ▪ Electronics and Biomedical Engineering ▪ Biomedical Engineering ▪ Electronics & Instrumentation Engineering ▪ Instrumentation and Control Engineering ▪ Applied Electronics & Instrumentation Engineering ▪ Cyber Physical System.	▪ Electronics and Computer Engineering ▪ Electrical and Computer Engineering ▪ Electronics and Communication (Advanced Communication Technology) ▪ Electronics Engineering (VLSI Design and Technology) ▪ Biomedical and Robotics Engineering ▪ Robotics and Artificial Intelligence ▪ Robotics and Automation
C **Physical Science**	▪ Civil Engineering ▪ Chemical Engineering ▪ Civil and Environmental Engineering ▪ Mechanical Engineering ▪ Mechanical Engineering (Auto) ▪ Mechanical Engineering (Automobile) ▪ Automobile Engineering ▪ Mechatronics Engineering ▪ Production Engineering	▪ Aeronautical Engineering ▪ Agriculture Engineering ▪ Industrial Engineering ▪ Metallurgical & Materials Engineering ▪ Naval Architecture & Ship Building Engineering ▪ Polymer Engineering. ▪ Safety and Fire Engineering
D **Life Science**	▪ Biotechnology ▪ Food Technology	▪ Biotechnology and Biochemical Engineering

2. Course Category

- **University Core (UC):** The university core is a compulsory set of courses for all B. Tech students, which includes basic courses in Humanities and Computer Science.
- **University Elective (UE):** These are elective courses from a basket of courses in the Humanities and Social Sciences.
- **Group Core (GC):** Courses listed under Group Core of a curriculum are group specific. These courses ensure that students gain specialized knowledge and skills in their chosen field of study.

FIRST SEMESTER (July-December): Group A														
10 Days Compulsory Induction Program and UHV														
Sl. No:	Slot	Course Code	Course Type	Course Category	Course Title (Course Name)	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
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	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	S_1/ S_2	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.														

Internal evaluation by college.

****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.*

FIRST SEMESTER (July-December): Group B														
10 Days Compulsory Induction Program and UHV														
Sl. No:	Slot	Course Code	Course Type	Course Category	Course Title (Course Name)	Credit Structure				SS	Total Marks		Credits	Hrs./Week
						L	T	P	R		CIA	ESE		
1	A	GYMAT101	BSC	GC	Mathematics for Electrical Science-1	3	0	0	0	4.5	40	60	3	3
2	B S1/ S2	GBPHT121 / GXCYT122	BSC	GC	Physics for Electrical Science / Chemistry for Electrical Science	3	0	2	0	5.5	40	60	4	5
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 / UCHUT128	HWP / HMC	UC	Health and Wellness / Life Skills and Professional Communication	1 / 2	0 / 0	1 / 1	0 / 0	0 / 3.5	50 / 100	0 / 0	1	2/3
8	S_1/ S_2	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.														

Internal evaluation by college.

****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.*

FIRST SEMESTER (July-December): Group C														
10 Days Compulsory Induction Program and UHV														
Sl. No:	Slot	Course Code	Course Type	Course Category	Course Title (Course Name)	Credit Structure				SS	Total Marks		Credits	Hrs./Week
						L	T	P	R		CIA	ESE		
1	A	GYMAT101	BSC	GC	Mathematics for Physical Science-1	3	0	0	0	4.5	40	60	3	3
2	B S1/ S2	GZPHT121	BSC	GC	Physics for Physical Science	3	0	2	0	5.5	40	60	4	5
		GCCYT122			Chemistry for Physical Science									
3	C	GCEST103	ESC	GC	Engineering Mechanics	3	0	0	0	4.5	40	60	3	3
4	D	GCEST104	ESC	GC	Introduction to Mechanical Engineering & Civil Engineering (Part1: Mechanical Engineering)	2	0	0	0	3	20	30	2+2=4	4
					(Part 2: Civil 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	GCESL106	ESC	GC	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	S_1/ S_2	UCSEM129	SEC	UC	Skill Enhancement Course: Digital 101(NASSCOM)	MOOC				2			-	
Total										**30/ 32**			**20**	**24/ 25**
Bridge Course (Mathematics or Introduction to Computer Science) *: Total 15 Hrs.														

FIRSTSEMESTER (July-December): Group D														
10 Days Compulsory Induction Program														
Sl. No:	Slot	Course Code	Course Type	Course Category	Course Title (Course Name)	Credit Structure				SS	Total Marks		Credits	Hrs./Week
						L	T	P	R		CIA	ESE		
1	A	GDMAT101	BSC	GC	Mathematics for Life Science-1	3	0	0	0	4.5	40	60	3	3
2	B S1/S2	GZPHT121	BSC	GC	Physics for Life Science	3	0	2	0	5.5	40	60	4	5
		GDCYT122			Chemistry for Life Science									
3	C	GMEST103	ESC	GC	Engineering Graphics and Computer Aided Drawing.	2	0	2	0	4	40	60	3	4
4	D	GDXXT104	ESC	GC	Introduction to Biotechnology/Food Technology	3	1	0	0	5	40	60	4	4
5	F	UCEST105	ESC	UC	Algorithmic Thinking with Python	3	0	2	0	5.5	40	60	4	5
6	L	GDXXL106	ESC	GC	Foundations of Biotechnology/Food Technology Lab	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	S_1/ S_2	UCSEM129	SEC	UC	Skill Enhancement Course: Digital 101(NASSCOM)	MOOC				2			-	
Total										**29/ 31**			**20**	**25/ 26**
Bridge Course (Mathematics or Introduction to Computer Science) *: Total 15 Hrs.														

Internal evaluation by college., **No Grade Points will be awarded for the MOOC course and I slot course.

SECOND SEMESTER (January-June): Group A														
Sl. No:	Slot	Course Code	Course Type	Course Category	Course Title (Course Name)	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 / GXCYT122	BSC	GC	Physics for Information Science / Chemistry for Information Science	3	0	2	0	5.5	40	60	4	5
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	PCXXT205	PC	PC	Programme Core-1	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 / UCHUT128	HWP / HMC	UC	Health and Wellness / Life Skills and Professional Communication	1 / 2	0 / 0	1 / 1	0 / 0	0 / 3.5	50 / 100	0 / 0	1	2/3
8	L	GXESL208	ESC	GC	IT Workshop	0	0	2	0	1	50	50*	1	2
	S_1/ S_2	UCSEM129	SEC	UC	Skill Enhancement Course: Digital 101(NASSCOM)	MOOC							1	
Total										**34**			**24**	**27/ 28**

SECOND SEMESTER (January-June): Group B														
Sl. No:	Slot	Course Code	Course Type	Course Category	Course Title (Course Name)	Credit Structure				SS	Total Marks		Credits	Hrs./Week
						L	T	P	R		CIA	ESE		
1	A	GYMAT201	BSC	GC	Mathematics for Electrical Science-2	3	0	0	0	4.5	40	60	3	3
2	B S1/ S2	GBPHT121 / GXCYT122	BSC	GC	Physics for Electrical Science / Chemistry for Electrical Science	3	0	2	0	5.5	40	60	4	5
3	C	GXEST203 / GBEST213	ESC	GC	Foundations of Computing: From Hardware Essentials to Web Design / Engineering Mechanics (EEE, CP, BR, RA & RU)	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	PCXXT205	PC	PC	Programme Core-1	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 / UCHUT128	HWP / HMC	UC	Health and Wellness / Life Skills and Professional Communication	1 / 2	0 / 0	1 / 1	0 / 0	0 / 3.5	50 / 100	0 / 0	1	2/3
8	L	GXESL208	ESC	GC	IT Workshop	0	0	2	0	1	50	50*	1	2
	S_1/ S_2	UCSEM129	SEC	UC	Skill Enhancement Course: Digital 101(NASSCOM)	MOOC							1	
Total										**34**			**24**	**27/ 28**

Internal evaluation by college., **No Grade Points will be awarded for the MOOC course and I slot course.

SECOND SEMESTER (January-June): Group C														
Sl. No:	Slot	Course Code	Course Type	Course Category	Course Title (Course Name)	Credit Structure				SS	Total Marks		Credits	Hrs./Week
						L	T	P	R		CIA	ESE		
1	A	GYMAT201	BSC	GC	Mathematics for Physical Science-2	3	0	0	0	4.5	40	60	3	3
2	B S1/ S2	GZPHT121	BSC	GC	Physics for Physical Science	3	0	2	0	5.5	40	60	4	5
		GCCYT122			Chemistry for Physical Science									
3	C	GZEST203	ESC	GC	Engineering Graphics and Computer Aided Drawing	2	0	2	0	4	40	60	3	4
4	D	GZEST204	ESC	GC	Basic 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	E	PCXXT205	PC	PC	Programme Core-1	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	UCPWT127	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	GZESL208	ESC	GC	Basic Electrical and Electronics Engineering workshop	0	0	2	0	1	50	50*	1	2
		GCESL218			Civil Engineering Drafting Lab (CE, CV)									
	S_1/ S_2	UCSEM129	SEC	UC	Skill Enhancement Course: Digital 101(NASSCOM)	MOOC							1	
Total										**34**			**24**	**27/ 28**

SECOND SEMESTER (January-June): Group D														
Sl. No:	Slot	Course Code	Course Type	Course Category	Course Title (Course Name)	Credit Structure				SS	Total Marks		Credits	Hrs./Week
						L	T	P	R		CIA	ESE		
1	A	GDMAT201	BSC	GC	Mathematics for Life Science-2	3	0	0	0	4.5	40	60	3	3
2	B 1/2	GZPHT121	BSC	GC	Physics for Life Science	3	0	2	0	5.5	40	60	4	5
		GDCYT122			Chemistry for Life Science									
3	C	GDEST203	ESC	GC	Basic Mechanical & Civil Engineering	3	0	0	0	4.5	40	60	3	3
4	D	GZEST204	ESC	GC	Basic 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	E	PCXXT205	PC	PC	Programme Core-1	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**	UCPWT127	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	GZESL208	ESC	GC	Basic Electrical and Electronics Engineering Workshop	0	0	2	0	1	50	50*	1	2
	S_1/ S_2	UCSEM129	SEC	UC	Skill Enhancement Course: Digital 101(NASSCOM)	MOOC							1	
Total										**34**			**24**	**26/ 27**

Internal evaluation by college., **No Grade Points will be awarded for the MOOC course and I slot course.

THIRD SEMESTER (July-December)														
Sl. No:	Slot	Course Code	Course Type	Course Category	Course Title (Course Name)	Credit Structure				SS	Total Marks		Credits	Hrs./ Week
						L	T	P	R		CIA	ESE		
1	A	G_MAT301	BSC	GC	Mathematics for -------Science-3	3	0	0	0	4.5	40	60	3	3
2	B	PCXXT302	PC	PC	Programme Core-2	3	1	0	0	5	40	60	4	4
3	C	PCXXT303	PC	PC	Programme Core-3	3	1	0	0	5	40	60	4	4
4	D	PBXXT304	PC-PBL	PB	Programme Core-PBL-1	3	0	0	1	5.5	60	40	4	4
5	F	GAEST305/ GNEST305	ESC	GC	**Group A:** Digital Electronics & Logic Design **Group B, C and D:** Introduction to Artificial Intelligence and Data Science	3	1	0		5	40	60	4	4
6	G S3/S4	UCHUT346 / UCHUT347	HMC	UC	Economics for Engineers / Engineering Ethics and Sustainable Development*	2	0	0	0	3	50	50	2	2
7	L	PCXXL307	PCL	PC	Lab-1	0	0	3	0	1.5	50	50	2	3
8	Q	PCXXL308	PCL	PC	Lab-2	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 (Course Name)	Credit Structure				SS	Total Marks		Credits	Hrs./ Week
						L	T	P	R		CIA	ESE		
1	A	G_MAT401	BSC	GC	Mathematics for -------Science-4	3	0	0	0	4.5	40	60	3	3
2	B	PCXXT402	PC	PC	Programme Core-4	3	1	0	0	5	40	60	4	4
3	C	PCXXT403	PC	PC	Programme Core-5	3	1	0	0	5	40	60	4	4
4	D	PBXXT404	PC-PBL	PB	Programme Core-PBL-2	3	0	0	1	5.5	60	40	4	4
5	E	PEXXT41N	PE	PE	PE-1	3	0	0	0	4.5	40	60	3	3
6	G S3/S4	UCHUT346 / UCHUT347	HMC	UC	Economics for Engineers / Engineering Ethics and Sustainable Development*	2	0	0	0	3	50	50	2	2
7	L	PCXXL407	PCL	PC	Lab-3	0	0	3	0	1.5	50	50	2	3
8	Q	PCXXL408	PCL	PC	Lab-4	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 course 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.*

FIFTH SEMESTER (July-December)														
Sl. No:	Slot	Course Code	Course Type	Course Category	Course Title (Course Name)	Credit Structure				SS	Total Marks		Credits	Hrs./ Week
						L	T	P	R		CIA	ESE		
1	A	PCXXT501	PC	PC	Programme Core-6	3	1	0	0	5	40	60	4	4
2	B	PCXXT502	PC	PC	Programme Core-7	3	1	0	0	5	40	60	4	4
3	C	PCXXT503	PC	PC	Programme Core-8	3	0	0	0	4.5	40	60	3	3
4	D	PBXXT504	PC-PBL	PB	Programme Core-PBL-3	3	0	0	1	5.5	60	40	4	4
5	E	PEXXT52N	PE	PE	PE-2	3	0	0	0	4.5	40	60	3	3
6	I*	UCHUM506	HMC	UC	Constitution Of India (MOOC)	-	-	-	-	2	-	-	1	-
7	L	PCXXL507	PCL	PC	Lab-5	0	0	3	0	1.5	50	50	2	3
8	Q	PCXXL508	PCL	PC	Lab-6	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.

SIXTH SEMESTER (January-June)														
Sl. No:	Slot	Course Code	Course Type	Course Category	Course Title (Course Name)	Credit Structure				SS	Total Marks		Credits	Hrs./ Week
						L	T	P	R		CIA	ESE		
1	A	PCXXT601	PC	PC	Programme Core-9	3	1	0	0	5	40	60	4	4
2	B	PCXXT602	PC	PC	Programme Core-10	3	0	0	0	4.5	40	60	3	3
3	C	PEXXT63N	PE	PE	PE-3	3	0	0	0	4.5	40	60	3	3
4	D	PBXXT604	PC-PBL	PB	Core-PBL-4	3	0	0	1	5.5	60	40	4	4
5	F	G(A/B/C/D) EST605	ESC	GC	Design Thinking and Product Development (Group Specific Syllabus)	2	0	0	0	3	40	60	2	2
6	O	OEXXT61N/ IEXXT61N	OE/ILE	OE/IE	OE/ILE-1	3	0	0	0	4.5	40	60	3	3
7	L	PCXXL607	PCL	PC	Lab-7	0	0	3	0	1.5	50	50	2	3
8	P	PCXXP608	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 of 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.

SIXTH SEMESTER (CE, EE, ME)														
Sl. No:	Slot	Course Code	Course Type	Course Category	Course Title (Course Name)	Credit Structure				SS	Total Marks		Credits	Hrs/ Week
						L	T	P	R		CIA	ESE		
1	A	PCXXT601	PC	PC	Programme Core-9	3	0	0	0	4.5	40	60	3	3
2	B	PCXXT602	PC	PC	Programme Core-10	3	0	0	0	4.5	40	60	3	3
3	C	PEXXT63N	PE	PE	PE-3	3	0	0	0	4.5	40	60	3	3
4	D	PBXXT604	PC-PBL	PB	Core-PBL-4	3	0	0	1	5.5	60	40	4	4
5	F	G(B/C) EST605	ESC	GC	Design Thinking and Product Development (Group Specific Syllabus)	2	0	0	0	3	40	60	2	2
6	O	OEXXT61N/ IEXXT61N	OE/ILE	OE/IE	OE/ILE-1	3	0	0	0	4.5	40	60	3	3
7	L	PCXXL607	PCL	PC	Lab-7	0	0	3	0	1.5	50	50	2	3
8	P	PCXXP608	PWS	PC	Mini Project: Socially Relevant Project	0	0	0	0	3	50	50	2	3
9	Q*	PCXXL609	PCL	PC	Lab-8	0	0	2	0	1	50	50	1	2
10	R/ M/ H		VAC		Remedial/Minor/Honours Course	3	0	0	0	4.5			3*	3*
	S5/ S6	Industrial Visit (Maximum of 12 Days are permitted, Not Exceeding more than 6 Working Days) /Industrial Training												
Total										**32/ 36**			**23/26***	**26/29***

The LAB-8 course is included in the curriculum of the following branches:

- Civil Engineering
- Electrical and Electronics Engineering
- Mechanical Engineering

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.

SEVENTH SEMESTER (July-December)													
Sl. No:	Slot	Course Code	Course Type	Course Category	Course Title (Course Name)	Credit Structure				SS	Total Marks		Credits	Hrs/ Week
						L	T	P	R		CIA	ESE		
1	A	PEXXT74N/ PEXXM74N	PE	PE	PE-4 (Internship Students: Self Study/MOOC Approved by the University/Online Classes)	3	0	0	0	4.5	40	60	3	3
2	B	PEXXT75N/ PEXXM75N	PE	PE	PE-5 (Internship Students: Self Study/MOOC Approved by the University/Online Classes)	3	0	0	0	4.5	40	60	3	3
3	O	OEXXT72N/ IEXXT72N/ OEXXM72N	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	PCXXS705	PWS	PC	Seminar	0	0	3	0	1.5	50	0	2	3
6	P**	PCXXP706/ PCXXI706	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.*

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

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)

Note: Open Electives are such courses which will be offered by other departments.

Slot I: HMC Elective	
1	Project Management: Planning, Execution, Evaluation and Control
2	Proficiency course in French. (MOOC) (B1 level)
3	Proficiency Course in German (B1 Level). (MOOC)
4	Proficiency Course in Spanish (B1 Level) (MOOC)
5	Introduction to Japanese Language and Culture (N5 level). (MOOC)

EIGHT SEMESTER (January-June)														
Sl. No:	Slot	Course Code	Course Type	Course Category	Course Title (Course Name)	Credit Structure				SS	Total Marks		Credits	Hrs/ Week
						L	T	P	R		CIA	ESE		
1	A	PEXXT86N / PEXXM86N	PE	PE	PE-6 (Internship Students: Self Study/MOOC Approved by the University/Online Classes)	3	0	0	0	4.5	40	60	3	3
2	O	OEXXT83N/ IEXXT83N/ OEXXM83N	OE/ILE	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**	PCXXP806/ PCXXI806/ PCXXJ806	PWS	PC	Option 1: Major Project Option 2: Internship (4-6 Months) Option 3: Major Project Phase -II	0	0	0	8	8	100	0	4	8
Total										**20**			**11**	**16**

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

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

** *Option 1: For the students who have opted for an internship in S7*

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

Option 3: For the students who have not opted for internship in S7/S8

HMC Courses			
Sl. No:	**Semester**	**Course Area**	**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 Area**	**Credits**
1	**S1**	Group Specific Mathematics-1	3
2	**S1/S2**	Physics for Engineers	4
3		Chemistry for Engineers	4
4	**S2**	Group Specific Mathematics-2	3
5	**S3**	Group Specific Mathematics-3	3
6	**S4**	Group Specific Mathematics-4	3
Total Credits			**20**

ESC Courses (Group A)			
Sl. No:	**Semester**	**Course Area**	**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**

ESC Courses (Group B)			
Sl. No:	**Semester**	**Course Area**	**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 / Engineering Mechanics (EEE, CP,BR, RA and RU)	3
6		Programming in C	4
7		Engineering Entrepreneurship and IPR	3
8		IT Workshop	1
9	**S3**	Introduction to Artificial Intelligence and Data Science	4
10	**S6**	Design Thinking and Creativity	2
Total Credits			**29**

ESC Courses (Group C)			
Sl. No:	**Semester**	**Course Area**	**Credits**
1	**S1**	Engineering Mechanics	3
2		Introduction to Mechanical Engineering/ Civil Engineering	4
3		Algorithmic Thinking with Python	4
4		Engineering Workshop	1
5	**S2**	Engineering Graphics and Computer Aided Drawing	3
6		Basic Electrical and Electronics Engineering	4
7		Engineering Entrepreneurship and IPR	3
8		Basic Electrical and Electronics Engineering Workshop Civil Engineering Drafting Lab (CE, CV)	1
9	**S3**	Introduction to Artificial Intelligence and Data Science	4
10	**S6**	Design Thinking and Creativity	2
Total Credits			**29**

ESC Courses (Group D)			
Sl. No:	**Semester**	**Course Area**	**Credits**
1	**S1**	Engineering Graphics and Computer Aided Drawing	3
2		Introduction to Biotechnology/Food Technology/Agriculture Engineering	4
3		Algorithmic Thinking with Python	4
4		Foundations of Biotechnology/Food Technology/Agriculture Engineering Lab	1
5	**S2**	Basic Mechanical Engineering and Civil Engineering	3
6		Basic Electrical and Electronics Engineering	4
7		Engineering Entrepreneurship and IPR	3
8		Basic Electrical and Electronics Engineering Workshop	1
9	**S3**	Introduction to Artificial Intelligence and Data Science	4
10	**S6**	Design Thinking and Creativity	2
Total Credits			**29**

Programme Core Courses (PC)			
Sl. No:	**Semester**	**Course Area**	**Credits**
1	**S2**	Core 1	4
2	**S3**	Core 2	4
3		Core 3	4
4		Lab-1	2
5		Lab-2	2
6	**S4**	Core 4	4
7		Core 5	4
8		Lab-3	2
9		Lab-4	2
10	**S5**	Core 6	4
11		Core 7	4
12		Core 8	3
13		Lab-5	2
14		Lab-6	2
15	**S6**	Core 9	4
16		Core 10	3
17		Lab-7	2
Total Credits (Theory -10, Lab-7)			**52**

Programme Core Courses (CE, EE, ME Branches)			
Sl. No:	**Semester**	**Course Area**	**Credits**
1	**S2**	Core 1	4
2	**S3**	Core 2	4
3		Core 3	4
4		Lab-1	2
5		Lab-2	2
6	**S4**	Core 4	4
7		Core 5	4
8		Lab-3	2
9		Lab-4	2
10	**S5**	Core 6	4
11		Core 7	4
12		Core 8	3
13		Lab-5	2
14		Lab-6	2
15	**S6**	Core 9	3
16		Core 10	3
17		Lab-7	2
18		Lab-8	1
Total Credits (Theory -10, Lab-8)			**52**

Programme Core-Project Based Learning (PBL)			
Sl. No:	**Semester**	**Course Area**	**Credits**
1	**S3**	Core PBL-1	4
2	**S4**	Core PBL-2	4
3	**S5**	Core PBL-3	4
4	**S6**	Core PBL-4	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**

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/ Internship and 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**

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COURSE CODING PATTERN

A course code in an engineering degree curriculum is a unique identifier assigned to a specific academic course. It is a combination of letters and numbers that serves as a shorthand reference for the course.

- Each course is denoted by a unique code consisting of Eight alphanumeric characters (Five alphabets followed by Three numerals).
  - Format: [YYXXCSNN]
  - Eg: **UCMAT201**
- The first five characters (YYXXC) will be alphabets, representing the course category (YY), name of the department (XX) offering that course followed by the nature of the course(C).
  - YY- University Core (**UC**), Group Core (**GC**), Programme Core (**PC**) etc.
  - XX- Computer Science (**CS**), Mechanical Engineering (**ME**), Mathematics (**MA**) etc.
  - C- Theory(**T**), Lab(**L**), Seminar(**S**), Project(**P**) etc.
  - The last three characters (SNN) will be digits, providing a unique numerical identifier for the course.
  - S- Semester Number (It can have a number from 1 to 8) in which the course is offered
  - NN- Course Sequence Number

This format aims to create a clear and consistent structure for course codes, making it easier for students, faculty, and administrative staff to identify and manage different courses within the university. These course numbers are to be given in the curriculum and syllabi.

For eg: GAPHT121- is a theory course offered by the physic department in the first semester for group A branch. PCMEL507 - is a Programme core laboratory course offered by the mechanical engineering department in the fifth semester. PBCST604 - is a project-based learning course offered by the computer science engineering department in the sixth semester. UCHUT703 is a university core theory course offered by the humanities department in the seventh semester.

- If a course is offered in two successive semesters, then the S and first N(Character in 7th place) will represent the semesters in which that particular course is offered. In this case, S will represent the lower semester and N will represent the higher semester.

For eg: **UCHUT345**-is a university core theory course offered by the humanities department in the third or fourth semester.

COURSE CODING

Course Category	Branch/Department Code	Codes for the nature of the Course	Semester Number	Identification Number for Each Course
YY	**XX**	**C**	**S**	**NN**
UC	HU, HW	T-Theory M-MOOC L- Lab S-Seminar P-Project J-Project Phase 2 I-Internship	1 to 8	01,02,03…….
UE				
GA, GB, GC, GD, GY	CS, CE, EC, EE, ME, BT, MP, FT, MA….			
PC				
PB				
PE, OE/IE				
HN-Honours MN-Minor				

- T- Theory based courses (Other than the lecture hours, these courses can have tutorial, practical and project hours, e.g. L-T-P-R structures 3-1-0-0, 3-0-0-1, 3-0-0-0,2-0-2-0 etc.
- Course Category Code:

CODE	DESCRIPTION	EXAMPLE
GX	Group Core courses Common to Group A and Group B	GXCYT122
GY	Group Core courses Common to Group B and Group C	GYMAT101,GYMAT201
GZ	Group Core courses Common to Group C and Group D	GZPHT121, GZEST204
GM	Group Core courses Common to Group A, Group B and Group D	GMEST103
GN	Group Core courses Common to Group B, Group C and Group D	GNEST305