



APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

(A State Government University)

BCA (Hons)

Curriculum - 2024





APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

(A State Government University)

Bachelor of Computer Application (Hons)

Curriculum- 2024

Semester I to VIII

Ambady Nagar, Sreekaryam

Thiruvananthapuram- 695016

FIRST SEMESTER (July-December)													
5 Days Compulsory Induction Program													
Sl. No:	Slot	Course Code	Course Category	Course Title	Credit Structure				SS	Total Marks		Credits	Hrs./Week
					L	T	P	R		CIA	ESE		
1	A	BCAET101	AEC	Professional English	3	0	0	0	4.5	40	60	3	3
2	B	BCPCT102	PCC	Foundational Mathematics	3	0	0	0	4.5	40	60	3	3
3	C	BCMDT103	MDC	Business Management and Fundamentals of Accountancy	3	1	0	0	5	40	60	4	4
4	D	BCPCT104	PCC	Digital Electronics & Logic Designs	3	1	0	0	5	40	60	4	4
5	E	BCPCT105	PCC	Structured Programming using C	3	1	0	0	5	40	60	4	4
6	L	BCPCL106	PCL	Structured Programming Lab	0	0	4	0	2	50	50	2	4
7	Q	BCPCL107	PCL	Linux Lab	0	0	4	0	2	50	50	2	4
8	H (S1/S2)	UCSEM129	SEC	Digital 101(NASSCOM)	MOOC*				2	-	-	-	-
Total									28/ 30			22	26

SECOND SEMESTER (January-June)													
Sl. No:	Slot	Course Code	Course Category	Course Title	Credit Structure				SS	Total Marks		Credits	Hrs./Week
					L	T	P	R		CIA	ESE		
1	A	BCAET201	AEC	Technical Communication	3	0	0	0	4.5	40	60	3	3
2	B	BCPCT202	PCC	Discrete Mathematics	3	1	0	0	5	40	60	4	4
3	C	BCPCT203	PCC	Computer Organization and Architecture	3	1	0	0	5	40	60	4	4
4	D	BCPCT204	PCC	Data Structures	3	1	0	0	5	40	60	4	4
5	E	BCPCT205	PCC	Object Oriented Programming using JAVA	3	1	0	0	5	40	60	4	4
6	L	BCPCL206	PCL	Data Structures Lab	0	0	4	0	2	50	50	2	4
7	Q	BCPCL207	PCL	Object Oriented Programming Lab	0	0	4	0	2	50	50	2	4
8	H (S1/S2)	UCSEM129	SEC	Digital 101(NASSCOM)	MOOC*				2	-	-	1	-
Total									29/ 31			24	27

- 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

***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 Category	Course Title	Credit Structure				SS	Total Marks		Credits	Hrs./Week
					L	T	P	R		CIA	ESE		
1	A	BCPCT301	PCC	Statistical and Numerical Methods	2	1	0	0	3.5	40	60	3	3
2	B	BCPCT302	PCC	Operating Systems	3	0	0	0	4.5	40	60	3	3
3	C	BCPCT303	PCC	Design And Analysis of Algorithms	3	1	0	0	5	40	60	4	4
4	D	BCPCT304	PCC	Database Management Systems	3	1	0	0	5	40	60	4	4
5	E	BCPBT306	PBL	UI and UX Design Lab	2	0	2	2	6	60	40	4	6
6	F	BCAET306	AEC	Engineering Entrepreneurship & IPR	3	0	0	0	4.5	60	40	3	3
7	L	BCPCL307	PCL	Database Management Systems Lab	0	0	4	0	2	50	50	2	4
Total									31			23	27

FOURTH SEMESTER (January-June)													
Sl. No:	Slot	Course Code	Course Category	Course Title	Credit Structure				SS	Total Marks		Credits	Hrs./Week
					L	T	P	R		CIA	ESE		
1	A	BCPCT401	PCC	Linear Algebra and Number Theory	2	1	0	0	3.5	40	60	3	3
2	B	BCPCT402	PCC	Software Engineering	3	1	0	0	5	40	60	4	4
3	C	BCPCT403	PCC	Computer Networks	3	1	0	0	5	40	60	4	4
4	D	BCPCT404	PCC	Internet Concepts and Web Programming	3	1	0	0	5	40	60	4	4
5	E	BCPCT405	PCC	Principles of Data Science	3	0	0	0	4.5	40	60	3	3
6	F	BCPBT406	PBL	Web Programming Lab	2	0	2	2	6	60	40	4	6
7	L	BCPCL407	PCL	Exploratory Data Analysis using Python	0	0	4	0	2	50	50	2	4
Total									31			24	28

FIFTH SEMESTER (July-December)													
Sl. No:	Slot	Course Code	Course Category	Course Title	Credit Structure				SS	Total Marks		Credits	Hrs./Week
					L	T	P	R		CIA	ESE		
1	A	BCPCT501	PCC	Artificial Intelligence and Machine Learning	3	1	0	0	5	40	60	4	4
2	B	BCPET51N	PEC	Programme Elective -1	3	0	0	0	4.5	40	60	3	3
3	C	BCPET52N	PEC	Programme Elective -2	3	0	0	0	4.5	40	60	3	3
4	D	BCPBT504	PBL	Mobile Application Development Lab	2	0	2	2	6	60	40	4	6
5	L	BCPCL505	PCL	Machine Learning Lab	0	0	4	0	2	50	50	2	4
6	Q	BCPCP506	PCP	Mini Project -1	0	0	0	6	6	50	50	3	6
7	I*	BCVAT507	VAC	Human Values and Professional Ethics	MOOC*				2	-	-	1	0
Total									30			20	26

**No Grade Points will be awarded for the MOOC and Slot-I Courses.*

PROGRAM ELECTIVE 1: BCPET51N					
Slot	Course Code	Course Title	L-T-P-R	Hours	Credit
B	BCPET511	Software Testing	3-0-0-0	3	3
	BCPET512	Operations Research			
	BCPET513	Organizational Behaviour			

PROGRAM ELECTIVE 2 : BCPET52N					
Slot	Course Code	Course Title	L-T-P-R	Hours	Credit
C	BCPET521	Software Project Management	3-0-0-0	3	3
	BCPET522	Advanced Operating Systems			
	BCPET523	Digital Image Processing			

SIXTH SEMESTER (January-June)													
Sl. No:	Slot	Course Code	Course Category	Course Title	Credit Structure				SS	Total Marks		Credits	Hrs./Week
					L	T	P	R		CIA	ESE		
1	A	BCPCT601	PCC	Cloud Computing	3	1	0	0	5	40	60	4	4
2	B	BCPET63N	PEC	Programme Elective -3	3	0	0	0	4.5	40	60	3	3
3	C	BCPET64N	PEC	Programme Elective -4	3	0	0	0	4.5	40	60	3	3
4	D	BCPBT604	PBL	Full Stack Frameworks Lab	2	0	2	2	6	60	40	4	6
5	L	BCPCL605	PCL	R Programming Lab	0	0	4	0	2	50	50	2	4
6	Q	BCPCP606	PCP	Mini Project -2	0	0	0	6	6	50	50	3	6
7	I*	BCVAT607	VAC	Constitution of India	MOOC*				2	-	-	1	0
Total									30			20	26

**No Grade Points will be awarded for the MOOC and Slot-I Courses.*

PROGRAM ELECTIVE 3: BCPET63N					
Slot	Course Code	Course Title	L-T-P-R	Hours	Credit
B	BCPET631	Software Quality Assurance	3-0-0-0	3	3
	BCPET632	Deep Learning			
	BCPET633	Social Network Analysis			

PROGRAM ELECTIVE 4: BCPET64N					
Slot	Course Code	Course Title	L-T-P-R	Hours	Credit
C	BCPET641	Business Intelligence and Analytics	3-0-0-0	3	3
	BCPET642	Cyber Crimes and Cyber Laws			
	BCPET643	Embedded Systems			

SEVENTH SEMESTER (July-December)													
Sl. No:	Slot	Course Code	Course Category	Course Title (Course Name)	Credit Structure				SS	Total Marks		Credits	Hrs./Week
					L	T	P	R		CIA	ESE		
1	A	BCPET75N/ BCPEM75N	PEC	Programme Elective -5 (<i>Internship Students: Self Study/MOOC Approved by the University/Online Classes</i>)	3	1	0	0	5	40	60	3	4
2	B	BCPET76N/ BCPEM76N	PEC	Programme Elective -6 (<i>Internship Students: Self Study/MOOC Approved by the University/Online Classes</i>)	3	1	0	0	5	40	60	3	4
3	C	BCAET703	AEC	Research Publications and Ethics (<i>Internship Students: Self Study/MOOC Approved by the University/Online Classes</i>)	3	1	0	0	5	40	60	4	4
4	S (S7/S8)	BCPCS784	PCC	Seminar	0	0	2	0	1	50	-	-	2
5	P	BCPCP705/ BCPCI705/	PCP	*Option 1: Main Project *Option 2: Internship (4-6 Months)	0	0	0	12	12	100	-	6	12
Total									28			16	26

#Students who opt for internship in S7 shall take the Seminar in S8 and students who opt for internship in S8 shall take the Seminar in S7. The credit for the Seminar (2 credits) will be officially recorded in the eighth semester grade card.

*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)

PROGRAM ELECTIVE 5: BCPET75N					
Slot	Course Code	Course Title	L-T-P-R	Hours	Credit
A	BCPET751	Software Engineering with Agile and DevOps	3-1-0-0	4	3
	BCPET752	Cryptography and Cyber Security			
	BCPET753	Internet of Things			

PROGRAM ELECTIVE 6: BCPET76N					
Slot	Course Code	Course Title	L-T-P-R	Hours	Credit
B	BCPET761	Cyber Forensics	3-1-0-0	4	3
	BCPET762	Virtualization and Containers			
	BCPET763	Natural Language Processing			

EIGHTH SEMESTER (January-June)													
Sl. No:	Slot	Course Code	Course Category	Course Title (Course Name)	Credit Structure				SS	Total Marks		Credits	Hrs./Week
					L	T	P	R		CIA	ESE		
1	A	BCPET87N/ BCPEM87N	PEC	Programme Elective 7 (<i>Internship Students: Self Study/MOOC Approved by the University/Online Classes</i>)	3	1	0	0	5	40	60	3	4
2	B	BCPET88N/ BCPEM88N	PEC	Programme Elective 8 (<i>Internship Students: Self Study/MOOC Approved by the University/Online Classes</i>)	3	1	0	0	5	40	60	3	4
3	C	BCAET803	AEC	Research Methodology (<i>Internship Students: Self Study/MOOC Approved by the University/Online Classes</i>)	3	1	0	0	5	40	60	4	4
4	S (S7/S8)	BCPCS784	PCC	Seminar	0	0	2	0	1	50	-	2	2
5	P*	BCPCP805/ BCPCI805/ BCPCJ805	PCP	Option 1: Main Project Option 2: Internship (4-6 Months) Option 3: Main Project Phase -II	0	0	0	12	12	100	-	6	12
Total									28			18	26

*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

PROGRAM ELECTIVE 7: BCPET87N					
Slot	Course Code	Course Title	L-T-P-R	Hours	Credit
A	BCPET871	Web and Social Media Data Mining	3-1-0-0	4	3
	BCPET872	Blockchain Technology			
	BCPET873	Parallel and Distributed Computing			

PROGRAM ELECTIVE 8: BCPET88N					
Slot	Course Code	Course Title	L-T-P-R	Hours	Credit
B	BCPET881	Functional Programming	3-1-0-0	4	3
	BCPET882	Generative AI			
	BCPET883	Quantum Computing			

*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)		
6		Short Term Internship (Minimum 2 weeks), 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)		

**A minimum of 120 Activity points is to be acquired for obtaining the 3 Activity Credits required in the curriculum.*

Course Classification and Overall Credit Structure			
Sl. No.	Category	Code	Credits
1	Programme Core Course	PCC	69
2	Programme Elective Course	PEC	24
3	Programme Core Lab	PCL	16
4	Project Based Learning	PBL	16
5	Programme Core Project	PCP	18
6	Ability Enhancement Course	AEC	17
7	Multi-Disciplinary Course	MDC	4
8	Value Added Course	VAC	2
9	Skill Enhancement Course	SEC	1
10	Mandatory Student Activities	MSA	3
Total Mandatory Credits			170

COURSE CODING PATTERN

A course code in BCA Programme 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: [XXYYCSNN] Eg: UCMAT201
- The first five characters (YYXXC) will be alphabets, representing the Code for the Programme (XX), Course Category (YY), and the nature of the course(C).
 - XX- Code for BCA will be BC
 - YY- Course Category - Programme Core (PC), Programme Elective (PE) etc.
 - C- Theory(T), Lab(L), Seminar(S) 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

Course Coding				
Programme Code	Course Category	Codes for the nature of the Course	Semester Number	Identification Number for Each Course
XX	YY	C	S	NN
BC - for BCA	PC – Programme Core	T- Theory	1 to 8	01,02,03...
	PE – Programme Elective	L- Lab		
	PC – Programme Core Lab	M- MOOC		
	PB – Project Based Learning	S- Seminar		
	AE – Ability Enhancement Course	P- Project		
	VA – Value Added Course	J- Project Phase 2		
	SE – Skill Enhancement Course	I- Internship		

- For eg: BC**PCT**104- is a Core Theory Course offered in the first semester of BCA. BC**PCL**206 - is a Core Lab Course offered in the second semester. BC**PBT**306 - is a Project-Based Learning Course offered in the third semester. BC**AET**101- is an Ability Enhancement Course Theory Course offered in the first semester. **UCSEM**129 - is a University Core Skill Enhancement MOOC offered in the first and second semester.
- In the case of Programme Elective Courses, the last three digits SNN, S represents the Semester in which the elective is offered, and first N(Character in 7th place) represents the elective number and last N represents the Course number in each elective basket. For eg: BC**PET****523** – is the third course in the second elective basket which is offered in the fifth 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: **UCSEM**129 - is a University Core Skill Enhancement MOOC offered in the first and second semester.