



APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

**Curriculum for B.Tech Degree
Semesters I and II 2019**

APJ Abdul Kalam Technological University CET Campus,
Thiruvananthapuram
Kerala -695016 India
Phone +91 471 2598122, 2598422
Fax +91 471 2598522 Web: ktu.edu.in
Email: university@ktu.edu.in

B.TECH CURRICULUM

General Guidelines

Every course of B. Tech. Program shall be placed in one of the nine categories as listed in table below.

Sl. No	Category	Code	Credits
1	Humanities and Social Sciences including Management courses	HMC	8
2	Basic Science courses	BSC	26
3	Engineering Science Courses	ESC	22
4	Program Core Courses	PCC	76
5	Program Elective Courses	PEC	15
6	Open Elective Courses	OEC	3
7	Project work and Seminar	PWS	10
8	Mandatory Non-credit Courses (P/F) with grade	MNC	-----
9	Mandatory Student Activities (P/F)	MSA	2
Total Mandatory Credits			162
10	Value Added Course (Optional)	VAC	20

No semester shall have more than six lecture-based courses and two laboratory and/or drawing/seminar/project courses in the curriculum. Semester-wise credit distribution shall be as below:

Sem	1	2	3	4	5	6	7	8	Total
Credits	17	21	22	22	23	23	15	17	160
Activity Points	50				50				---
Credits for Activity	2								2
G.Total									162

Basic Science Courses: Maths, Physics, Chemistry, Biology for Engineers, Life Science etc

Engineering science courses: Basic Electrical, Engineering Graphics, Programming, Workshop, Basic Electronics, Basic Civil, Engineering Mechanics, Mechanical Engineering, Thermodynamics, Introduction to Engineering, Design Engineering, Materials Engineering etc.

Humanities and Social Sciences including Management courses: English, Humanities, Professional Ethics, Management-I, (Organizational Behavior)/ Finance & Accounting, Economics etc

Mandatory non-credit courses: Environmental Science, Constitution of India/Essence of Indian Knowledge Tradition, Industrial Safety Engineering, disaster management etc.

Course Code and Course Number

Each course is denoted by a unique code consisting of three alphabets followed by three numerals like **ECL201**. The first two letter code refers to the department offering the course. EC stands for course in Electronics & Communication, course code MA refers to a course in Mathematics, course code ES refers to a course in Engineering Science etc. Third letter stands for the nature of the course as indicated in the Table 1.

Table 1: Code for the courses

Code	Description
T	Theory based courses (other the lecture hours, these courses can have tutorial and practical hours, e.g., L-T-P structures 3-0-0, 3-1-2, 3-0-2 etc.)
L	Laboratory based courses (where performance is evaluated primarily on the basis of practical or laboratory work with LTP structures like 0-0-3, 1-0-3, 0-1-3 etc.)
N	Non-credit courses
D	Project based courses (Major, Mini Projects)
Q	Seminar Courses

Course Number is a three digit number and the first digit refers to the Academic year in which the course is normally offered, i.e. 1, 2, 3, or 4 for the B. Tech. Programme of four year duration. Of the other two digits, the last digit identifies whether the course is offered normally in the odd (odd number), even (even number) or in both the semesters (zero). The middle number could be any digit. ECL 201 is a laboratory course offered in EC department for third semester, MAT 101 is a course in Mathematics offered in the first semester, EET 344 is a course in Electrical Engineering offered in the sixth semester, PHT 110 is a course in Physics offered both the first and second semesters, EST 102 is a course in Basic Engineering offered by one or many departments. These course numbers are to be given in the curriculum and syllabi.

Departments

Each course is offered by a Department and their two-letter course prefix is given in Table 2.

Table 2: Departments and their codes

Sl.No	Department	Course Prefix	Sl.No	Department	Course Prefix
01	Aeronautical Engg	AO	16	Information Technology	IT
02	Applied Electronics & Instrumentation	AE	17	Instrumentation & Control	IC
03	Automobile	AU	18	Mandatory Courses	MC
04	Biomedical Engg	BM	19	Mathematics	MA
05	Biotechnology	BT	20	Mechanical Engg	ME
06	Chemical Engg	CH	21	Mechatronics	MR
07	Chemistry	CY	22	Metallurgy	MT
08	Civil Engg	CE	23	Mechanical (Auto)	MU
09	Computer Science	CS	24	Mechanical(Prod)	MP
10	Electrical & Electronics	EE	25	Naval & Ship Building	SB
11	Electronics & Biomedical	EB	26	Physics	PH
12	Electronics & Communication	EC	27	Polymer Engg	PO
13	Food Technology	FT	28	Production Engg	PE
14	Humanities	HU	29	Safety & Fire Engg	FS
15	Industrial Engg	IE			

SEMESTER I

SLOT	CATE GORY	COURSE CODE	COURSES	L-T-P	HOURS	CREDI T
A	BSC	MAT 101	LINEAR ALGEBRA AND CALCULUS	3-1-0	4	4
B 1/2	BSC	PHT 100	ENGINEERING PHYSICS A	3-1-0	4	4
		PHT 110	ENGINEERING PHYSICS B	3-1-0	4	4
	BSC	CYT100	ENGINEERING CHEMISTRY	3-1-0	4	4
C 1/2	ESC	EST 100	ENGINEERING MECHANICS	2-1-0	3	3
	ESC	EST 110	ENGINEERING GRAPHICS	2-0-2	4	3
D 1/2	ESC	EST 120	BASICS OF CIVIL & MECHANICAL ENGINEERING	4-0-0	4	4
	ESC	EST 130	BASICS OF ELECTRICAL & ELECTRONICS ENGINEERING	4-0-0	4	4
E	MNC	HUN 101	LIFE SKILLS	2-0-2	4	--
S 1/2	BSC	PHL 120	ENGINEERING PHYSICS LAB	0-0-2	2	1
	BSC	CYL 120	ENGINEERING CHEMISTRY LAB	0-0-2	2	1
T 1/2	ESC	ESL 120	CIVIL & MECHANICAL WORKSHOP	0-0-2	2	1
	ESC	ESL 130	ELECTRICAL & ELECTRONICS WORKSHOP	0-0-2	2	1
TOTAL					23/24 *	17

*Minimum hours per week

Note:-To make up for the hours lost due to induction program, one extra hour may be allotted to each course.

SEMESTER II

SLOT	CATEGORY	COURSE CODE	COURSES	L-T-P	HOURS	CREDIT
A	BSC	MAT 102	VECTOR CALCULUS, DIFFERENTIAL EQUATIONS AND TRANSFORMS	3-1-0	4	4
B 1/2	BSC	PHT 100	ENGINEERING PHYSICS A	3-1-0	4	4
		PHT 110	ENGINEERING PHYSICS B	3-1-0	4	4
	BSC	CYT100	ENGINEERING CHEMISTRY	3-1-0	4	4
C 1/2	ESC	EST 100	ENGINEERING MECHANICS	2-1-0	3	3
	ESC	EST 110	ENGINEERING GRAPHICS	2-0-2	4	3
D 1/2	ESC	EST 120	BASICS OF CIVIL & MECHANICAL ENGINEERING	4-0-0	4	4
	ESC	EST 130	BASICS OF ELECTRICAL & ELECTRONICS ENGINEERING	4-0-0	4	4
E	MNC	HUN 102	PROFESSIONAL COMMUNICATION	2-0-2	4	--
F	ESC	EST 102	PROGRAMMING IN C	2-1-2	5	4
S 1/2	BSC	PHL 120	ENGINEERING PHYSICS LAB	0-0-2	2	1
	BSC	CYL 120	ENGINEERING CHEMISTRY LAB	0-0-2	2	1
T 1/2	ESC	ESL 120	CIVIL & MECHANICAL WORKSHOP	0-0-2	2	1
	ESC	ESL 130	ELECTRICAL & ELECTRONICS WORKSHOP	0-0-2	2	1
TOTAL					28/29	21

NOTE:

- Engineering Physics A/Engineering Physics B and Engineering Chemistry shall be offered in both semesters. Institutions can advise students belonging to about 50% of the number of branches in the Institution to opt for Engineering Physics in S1 and Engineering Chemistry in S2 & vice versa. Students opting for Engineering Physics A/ Engineering Physics B in a semester should attend Physics Lab in the same semester and students opting for Engineering Chemistry in one semester should attend Engineering Chemistry Lab in the same semester.
- Engineering Physics A is meant for programs Applied Electronics, Biomedical, Computer Science, Electrical & Electronics, Electronics & Biomedical, Electronics & Communication, Information Technology, and Instrumentation & Control.
Engineering Physics B is meant for programs Aeronautical, Automobile, Biotechnology,

Chemical, Civil, Food Technology, Industrial, Mechanical, Mech(Auto), Mech(Prod), Mechatronics, Metallurgy, Naval Arch, Polymer, Production, Robotics, and Safety & Fire.

Physics Lab: Same syllabus for both Engineering Physics A and Engineering Physics B

3. Engineering Mechanics and Engineering Graphics shall be offered in both semesters. Institutions can advise students belonging to about 50% of the number of branches in the Institution to opt for Engineering Mechanics in S1 and Engineering Graphics in S2 & vice versa.

4. Basics of Civil & Mechanical Engineering and Basics of Electrical & Electronics Engineering shall be offered in both semesters. Basics of Civil & Mechanical Engineering contain equal weightage for Civil Engineering and Mechanical Engineering. Slot for the course is D with CIE marks of 25 each and ESE marks of 50 each. Students belonging to branches of AEI, EI, BME, ECE, EEE, ICE, CSE, IT, RA can choose this course in S1.

Basics of Electrical & Electronics Engineering contain equal weightage for Electrical Engineering and Electronics Engineering. Slot for the course is D with CIE marks of 25 each and ESE marks of 50 each. Students belonging to AERO, AUTO, CE, FSE, IE, ME, MECHATRONICS, PE, METTULURGY, BT, BCE, CHEM, FT, POLY can choose this course in S1. Students having Basics of Civil & Mechanical Engineering in one semester should attend Civil & Mechanical Workshop in the same semester and students having Basics of Electrical & Electronics Engineering in a semester should attend Electrical & Electronics Workshop in the same semester.

5. LIFE SKILLS

Life skills are those competencies that provide the means for an individual to be resourceful and positive while taking on life's vicissitudes. Development of one's personality by being aware of the self, connecting with others, reflecting on the abstract and the concrete, leading and generating change, and staying rooted in time-tested values and principles is being aimed at. This course is designed to enhance the employability and maximize the potential of the students by introducing them to the principles that underlie personal and professional success, and help them acquire the skills needed to apply these principles in their lives and careers.

6. PROFESSIONAL COMMUNICATION

Objective is to develop in the under-graduate students of engineering a level of competence in English required for independent and effective communication for their professional needs. Coverage: Listening, Barriers to listening, Steps to overcome them, Purposive listening practice, Use of technology in the professional world. Speaking, Fluency & accuracy in speech, Positive thinking, Improving self-expression, Tonal variations, Group discussion practice, Reading, Speed reading practice, Use of extensive readers, Analytical and critical reading practice, Writing Professional Correspondence, Formal and informal letters, Tone in formal writing, Introduction to reports. Study Skills, Use of dictionary, thesaurus etc., Importance of contents page, cover & back pages, Bibliography, Language Lab.