



APJ ABDUL KALAM TECHNOLOGICAL
UNIVERSITY

**Modified
Curriculum for
B.Tech Degree
Semesters I and II
2016**

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

SEMESTER I

Slot	Course No.	Subject	L-T-P	Hours	Credits
A	MA101	Calculus	3-1-0	4	4
B (1/2)	PH100	Engineering Physics	3-1-0	4	4
	CY100	Engineering Chemistry	3-1-0	4	4
C (1/2)	BE100	Engineering Mechanics	3-1-0	4	4
	BE110	Engineering Graphics	1-1-3	5	3
D	BE101-0X	Introduction to _____ Engineering	2-1-0	3	3
E	BE103	Introduction to Sustainable Engineering	2-0-1	3	3
F (1/4)	CE100	Basics of Civil Engineering	2-1-0	3	3
	ME100	Basics of Mechanical Engineering	2-1-0	3	3
	EE100	Basics of Electrical Engineering	2-1-0	3	3
	EC100	Basics of Electronics Engineering	2-1-0	3	3
S (1/2)	PH110	Engineering Physics Lab	0-0-2	2	1
	CY110	Engineering Chemistry Lab	0-0-2	2	1
T (2/4)	CE110/ME110/ EE110/EC110/ CS110/CH110	Basic Engineering Workshops	0-0-2	2	1
		(CS110 for CS and related branches and CH110 for CH and related branches only)	+ 0-0-2	2	1
U		U100 Language lab/CAD Practice/Bridge courses/Micro Projects etc	0-0-(2/3)	(2/3)	
				30	24/23
V		V100 Entrepreneurship/TBI/NCC/NSS/ Physical Edn. etc	0-0-2	2	Activity points

Notes:

1. Basic Engineering course of the parent branch included as Introduction to _____ Engineering. (3 credits)

List of Courses offered under BE 101-0X and Branches associated with each course

1. **BE101-01 Introduction to Civil Engineering**

Civil Engineering

2. **BE101-02 Introduction to Mechanical Engineering Sciences**

Aeronautical Engineering, Automobile Engineering, Food Technology, Industrial Engineering, Mechanical Engineering, Mechanical Engineering (Automobile), Mechanical Engineering (Production), Mechatronics, Metallurgy, Naval Architecture & Ship Building , Production Engineering.

3. **BE101-03 Introduction to Electrical Engineering**

Electrical & Electronics Engineering.

4. **BE101-04 Introduction to Electronics Engineering**

Applied Electronics & Instrumentation Engineering, Biomedical Engineering, Electronics & Biomedical Engineering, Electronics & Communication Engineering, Electronics & Instrumentation Engineering, Instrumentation & Control Engineering.

5. **BE101-05 Introduction to Computing and Problem Solving**

Computer Science & Engineering, Information Technology.

6. **BE101-06 Introduction to Chemical Engineering**

Biotechnology/ Biotechnology & Biochemical Engineering, Chemical Engineering,

2. **Institutions can recommend one of four other Basic Engineering courses offered during this semester for every branch.** However, the basic course selected should exclude the one corresponding to their branch of specialization. eg. Student who took Introduction to Civil Engineering should not take Basics of Civil Engineering; student who took Introduction to Electrical Engineering should not take Basics of Electrical Engineering

3. The six basic engineering workshops will be connected with the Introductory or Basics of Engineering courses offered. The students should attend **two workshops in Semester 1 and two in Semester 2.**

For example, students opting *Introduction to Civil Engineering* or Basics of Civil Engineering should attend the *Civil Engineering Workshop*, students opting *Introduction to Mechanical Engineering* or Basics of Mechanical Engineering should attend the *Mechanical Engineering Workshop*, students opting *Introduction to Chemical Engineering* should attend the *Chemical Engineering Workshop* and students opting *Introduction to Computing and Problem Solving* should attend the *Computer Science Workshop* etc. In addition, the students should attend one more workshop course in Semester 1, corresponding to the other Basic Engineering course they had been assigned by the institution. The workshop courses corresponding to both introductory and basic courses are same. However, the institutions may allot exercises or experiments listed in the syllabus based on the contents of corresponding theory course.

4. Engineering Physics 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 and vice versa. Students opting for Engineering Physics in S1 should attend Engineering Physics Lab in S1 and students opting for Engineering Chemistry in S1 should opt for Engineering Chemistry Lab in S1.

5. Engineering Mechanics and Engineering Graphics shall be offered in both semesters. Institutions can advise students belonging to about 50% of number of branches in the institution to opt for Engineering Mechanics in Semester 1 and Engineering Graphics in Semester 2 and vice versa.

6. It may be noted that for items 4 and 5 above, all students belonging to a particular branch of study must be assigned the same course during one semester. For example, all students belonging to Electrical and Electronics Engineering in an institution may be assigned Engineering Physics and Engineering Physics lab, while all students in Electronics and Communication Engineering branch may be assigned Engineering Chemistry and Chemistry lab. Likewise, all students in Civil Engineering branch may be assigned Engineering Graphics, while all students in Mechanical Engineering branch may be allotted the Engineering Mechanics in Semester 1 and vice versa in Semester 2.

7. For **Course U**, the Institutions should conduct **diagnostic tests** to identify the training requirements of each student and advise them to attend the suitable programme. The students who excel in all diagnostic tests can be assigned **Micro projects** under the guidance of faculty members. **The classes for which BE110 Engineering Graphics is offered under slot C may be divided into two batches and these batches shall attend CAD Practice lab & Language Lab in alternate weeks.**

8. **Course V** is for earning activity points outside academic hours, the details are covered in rules and regulations of KTU.



SEMESTER II

Slot	Course No.	Subject	L-T-P	Hours	Credits
A	MA102	Differential Equations	3-1-0	4	4
B (1/2)	PH100	Engineering Physics	3-1-0	4	4
	CY100	Engineering Chemistry	3-1-0	4	4
C (1/2)	BE100	Engineering Mechanics	3-1-0	4	4
	BE110	Engineering Graphics	1-1-3	5	3
D	BE102	Design & Engineering	2-0-2	4	3
E, F (2/4)	CE 100	Basics of Civil Engineering	2-1-0	3	3
	ME 100	Basics of Mechanical Engineering	2-1-0	3	3
	EE 100	Basics of Electrical Engineering	2-1-0	3	3
	EC 100	Basics of Electronics Engineering	2-1-0	3	3
	CS 100	Computer Programming (Only for CSE & IT branches)	2-1-0	3	3
S (1/2)	PH110	Engineering Physics Lab	0-0-2	2	1
	CY110	Engineering Chemistry Lab	0-0-2	2	1
T (2/4)	CE110/ME110/ EE110/EC110	Basic Engineering Workshops	0-0-2 +	2	1
	CS 120	Computer Programming Lab (only for CSE & IT Branches)	0-0-2	2	1
U		U100 Language lab / CAD Practice/ Bridge courses/ Micro Projects etc	0-0-(1/2)	(1/2)	
				30	24/23
V		V100 Entrepreneurship /TBI/NCC/NSS/ Physical Edn. etc	0-0-2	2	Activity points

Note 1: Institutions can assign **two of four** of Basics of Engineering courses not already taken by the student in the previous semester and the corresponding Workshop courses in Semester 2. **CS 100 Basics of Computer Programming & CS120 Computer Programming Lab** are mandatory for Computer Science & Engineering and Information Technology branches. Other branches are not allowed to opt these courses.

Note 2: **For Course U**, the classes for which BE110 Engineering Graphics is offered under slot C may be divided into two batches and these batches shall attend CAD Practice lab & Language Lab in alternate weeks.



Note: The Curriculum for Semesters I and II 2015 is slightly modified. The modifications are highlighted in red colour. The modified curriculum will not affect failed students of 2015 batch



APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

**Curriculum
for
B.Tech Degree
Semesters III to VIII
2016**

Civil Engineering

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

CET CAMPUS, THIRUVANANTHAPURAM – 695016

KERALA, INDIA

Phone +91 471 2598122, 2598422
Fax +91 471 2598522 Web: ktu.edu.in
Email: university@ktu.edu.in

BRANCH: *Civil Engineering*

SEMESTER - 3

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA201	Linear Algebra & Complex Analysis	3-1-0	4	A
CE201	Mechanics of Solids	3-1-0	4	B
CE203	Fluid Mechanics– I	3-1-0	4	C
CE205	Engineering Geology	3-0-1	4	D
CE207	Surveying	3-0-0	3	E
HS200/ HS210	Business Economics/Life Skills	3-0-0/ 2-0-2	3	F
CE231	Civil Engineering Drafting Lab	0-0-3	1	S
CE233	Surveying Lab	0-0-3	1	T

Total Credits = 24

Hours: 28/29

Cumulative Credits= 71

SEMESTER - 4

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA202	Probability Distributions, Transforms and Numerical Methods	3-1-0	4	A
CE202	Structural Analysis- I	3-1-0	4	B
CE204	Construction Technology	4-0-0	4	C
CE206	Fluid Mechanics- II	3-0-0	3	D
CE208	Geotechnical Engineering- I	3-0-0	3	E
HS210/ HS200	Life Skills/Business Economics	2-0-2/ 3-0-0	3	F
CE232	Materials Testing Lab I	0-0-3	1	S
CE234	Fluid Mechanics Lab	0-0-3	1	T

Total Credits = 23

Hours 28/27

Cumulative Credits= 94

BRANCH: *Civil Engineering*

SEMESTER - 5

Course Code	Course Name	L-T-P	Credits	Exam Slot
CE301	Design of Concrete Structures I	3-1-0	4	A
CE303	Structural Analysis- II	3-0-0	3	B
CE305	Geotechnical Engineering- II	3-0-0	3	C
CE307	Geomatics	3-0-0	3	D
CE309	Water Resources Engineering	3-0-0	3	E
	Elective 1	3-0-0	3	F
CE341	Design Project	0-1-2	2	S
CE331	Materials Testing Lab II	0-0-3	1	T
CE333	Geotechnical Engineering Lab	0-0-3	1	U

Total Credits = 23

Hours: 28

Cumulative Credits= 117

- Elective 1:-**
1. CE361 Advanced Concrete Technology
 2. CE363 Geotechnical Investigation
 3. CE365 Functional Design of Buildings
 4. CE367 Water Conveyance Systems
 5. CE369 Disaster Management
 6. CE371 Environment and Pollution
 7. CE 373 Advanced Mechanics of Materials

BRANCH: *Civil Engineering*

SEMESTER - 6

Course Code	Course Name	L-T-P	Credits	Exam Slot
CE302	Design of Hydraulic Structures	4-0-0	4	A
CE304	Design of Concrete Structures II	3-0-0	3	B
CE306	Computer Programming and Computational Techniques	3-0-0	3	C
CE308	Transportation Engineering- I	3-0-0	3	D
HS300	Principles of Management	3-0-0	3	E
	Elective 2	3-0-0	3	F
CE332	Transportation Engineering Lab	0-0-3	1	S
CE334	Computer Aided Civil Engineering Lab	0-0-3	1	T
CE352	Comprehensive Exam	0-1-1	2	U

Total Credits = 23

Hours:27. Cumulative Credits= 140

Elective 2:-

1. CE362 Ground Improvement Techniques
2. CE364 Advanced Foundation Engineering
3. CE366 Traffic Engineering and Management
4. CE368 Prestressed Concrete
5. CE372 Engineering Hydrology
6. CE374 Air Quality Management

BRANCH: *Civil Engineering*

SEMESTER - 7

Course Code	Course Name	L-T-P	Credits	Exam Slot
CE401	Design of Steel Structures	4-0-0	4	A
CE403	Structural Analysis- III	3-0-0	3	B
CE405	Environmental Engineering- I	3-0-0	3	C
CE407	Transportation Engineering -II	3-0-0	3	D
CE409	Quantity Surveying and Valuation	3-0-0	3	E
	Elective 3	3-0-0	3	F
CE451	Seminar & Project Preliminary	0-1-4	2	S
CE431	Environmental Engineering Lab	0-0-3	1	T

Total Credits = 22

Hours: 27

Cumulative Credits= 162

Elective 3:-

1. CE461 Wave Hydrodynamics and Coastal Engineering
2. CE463 Bridge Engineering
3. CE465 Geo-Environmental Engineering
4. CE467 Highway Pavement Design
5. CE469 Environmental Impact Assessment
6. CE471 Advanced Structural Design
7. CE473 Advanced Computational Techniques and Optimization

BRANCH: *Civil Engineering*

SEMESTER - 8

Course Code	Course Name	L-T-P	Credits	Exam Slot
CE402	Environmental Engineering II	3-0-0	3	A
CE404	Civil Engineering Project Management	3-0-0	3	B
	Elective 4	3-0-0	3	C
	Elective 5 (Non Departmental)	3-0-0	3	D
CE492	Project		6	S

Total Credits = 18

Hours: 30

Cumulative Credits= 180

Elective 4:-

1. CE462 Town and Country Planning
2. CE464 Reinforced Soil Structures and Geosynthetics
3. CE466 Finite Element Methods
4. CE468 Structural Dynamics and Earthquake Resistant Design
5. CE472 Transportation Planning
6. CE474 Municipal Solid Waste Management

ELECTIVE 5 (NON DEPARTMENTAL ELECTIVE COURSES)

(Note:- If a student has studied or chosen the elective course given within the brackets then the corresponding ND elective cannot be chosen)

1. AO482 FLIGHT AGAINST GRAVITY
2. AE482 INDUSTRIAL INSTRUMENTATION
3. AE484 INSTRUMENTATION SYSTEM DESIGN
4. AU484 MICROPROCESSOR AND EMBEDDED SYSTEMS
5. AU486 NOISE, VIBRATION AND HARSHNESS
6. BM482 BIOMEDICAL INSTRUMENTATION
7. BM484 MEDICAL IMAGING & IMAGE PROCESSING TECHNIQUES
8. BT461 DESIGN OF BIOLOGICAL WASTEWATER SYSTEMS
9. BT362 SUSTAINABLE ENERGY PROCESSES
10. CH482 PROCESS UTILITIES AND PIPE LINE DESIGN
11. CH484 FUEL CELL TECHNOLOGY
12. CS482 DATA STRUCTURES
13. CS484 COMPUTER GRAPHICS
14. CS486 OBJECT ORIENTED PROGRAMMING
15. CS488 C # AND .NET PROGRAMMING
16. EE482 ENERGY MANAGEMENT AND AUDITING
17. EE484 CONTROL SYSTEMS
18. EE486 SOFT COMPUTING
19. EE488 INDUSTRIAL AUTOMATION
20. EE494 INSTRUMENTATION SYSTEMS
21. EC482 BIOMEDICAL ENGINEERING
22. FT482 FOOD PROCESS ENGINEERING
23. FT484 FOOD STORAGE ENGINEERING

24. FT486	FOOD ADDITIVES AND FLAVOURING
25. IE482	FINANCIAL MANAGEMENT
26. IE484	INTRODUCTION TO BUSINESS ANALYTICS
27. IE486	DESIGN AND ANALYSIS OF EXPERIMENTS
28. IE488	TOTAL QUALITY MANAGEMENT
29. IC482	BIOMEDICAL SIGNAL PROCESSING
30. IT482	INFORMATION STORAGE MANAGEMENT
31. MA482	APPLIED LINEAR ALGEBRA
32. MA484	OPERATIONS RESEARCH
33. MA486	ADVANCED NUMERICAL COMPUTATIONS
34. MA488	CRYPTOGRAPHY
35. ME484	FINITE ELEMENT ANALYSIS (CE 466 FINITE ELEMENT METHODS)
36. ME482	ENERGY CONSERVATION AND MANAGEMENT
37. ME471	OPTIMIZATION TECHNIQUES (CE 473 ADVANCED COMPUTATIONAL TECHNIQUES AND OPTIMISATION)
38. MP482	PRODUCT DEVELOPMENT AND DESIGN
39. MP469	INDUSTRIAL PSYCHOLOGY & ORGANIZATIONAL BEHAVIOUR
40. MT482	INDUSTRIAL SAFETY
41. MR482	MECHATRONICS
42. FS482	RESPONSIBLE ENGINEERING
43. SB482	DREDGERS AND HARBOUR CRAFTS
44. HS482	PROFESSIONAL ETHICS