APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

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

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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 (CS110 for CS and related branches and CH110 for CH and related branches only)	0-0-2 + 0-0-2	2 2	1 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

Electrical and Electronics Engineering

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BRANCH:*Electrical & Electronics Engineering*

SEMESTER - 3

Course Code	*Course Name*	*L-T-P*	*Credits*	*Exam Slot*
MA201	Linear Algebra & Complex Analysis	3-1-0	4	A
EE201	Circuits and, Networks	3-1-0	4	B
EE203	Analog Electronic Circuits	3-1-0	4	C
EE205	DC Machines and Transformers	3-1-0	4	D
EE207	Computer Programming	2-1-0	3	E
HS200/ HS210	Business Economics/Life Skills	3-0-0/ 2-0-2	3	F
EE231	Electronic Circuits Lab	0-0-3	1	S
EE233	Programming 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
EE202	Synchronous and Induction Machines	3-1-0	4	B
EE204	Digital Electronics and Logic Design	2-1-0	3	C
EE206	Material Science	3-0-0	3	D
EE208	Measurements and Instrumentation	3-1-0	4	E
HS210/ HS200	Life Skills/Business Economics	2-0-2/ 3-0-0	3	F
EE232	Electrical Machines Lab I	0-0-3	1	S
EE234	Circuits and Measurements Lab	0-0-3	1	T

Total Credits = 23 Hours 28/27 Cumulative Credits= 94

BRANCH:*Electrical & Electronics Engineering*

SEMESTER - 5

Course Code	*Course Name*	*L-T-P*	*Credits*	*Exam Slot*
EE301	Power Generation, Transmission and Protection	3-1-0	4	A
EE303	Linear Control Systems	2-1-0	3	B
EE305	Power Electronics	3-0-0	3	C
EE307	Signals and Systems	3-0-0	3	D
EE309	Microprocessor and Embedded Systems	2-1-0	3	E
	Elective 1	3-0-0	3	F
EE341	Design Project	0-1-2	2	S
EE331	Digital Circuits and Embedded Systems Lab	0-0-3	1	T
EE333	Electrical Machines Lab II	0-0-3	1	U

Total Credits = 23 **Hours: 28** **Cumulative Credits= 117**

Elective 1:-

1. EE361 Object Oriented Programming
2. EE363 Computer Organization and Architecture
3. EE365 Digital System Design
4. EE367 New and Renewable Energy Systems
5. EE369 High Voltage Engineering

BRANCH:*Electrical & Electronics Engineering*

SEMESTER - 6

Course Code	*Course Name*	*L-T-P*	*Credits*	*Exam Slot*
EE302	Electromagnetics	2-1-0	3	A
EE304	Advanced Control Theory	3-1-0	4	B
EE306	Power System Analysis	3-0-0	3	C
EE308	Electric Drives	3-0-0	3	D
HS300	Principles of Management	3-0-0	3	E
	Elective 2	3-0-0	3	F
EE332	Systems and Control Lab	0-0-3	1	S
EE334	Power Electronics and Drives Lab	0-0-3	1	T
EE352	Comprehensive Exam	0-1-1	2	U

Total Credits = 23 **Hours: 27** **Cumulative Credits= 140**

Elective 2:-

1. EE362 Data Structures and Algorithms
2. EE364 Switched Mode Power Converters
3. EE366 Illumination Technology
4. EE368 Soft Computing
5. EE372 Biomedical Instrumentation

BRANCH:*Electrical & Electronics Engineering*

SEMESTER - 7

Course Code	*Course Name*	*L-T-P*	*Credits*	*Exam Slot*
EE401	Electronic communication	2-1-0	3	A
EE403	Distributed generation and smart grids	3-0-0	3	B
EE405	Electrical system design	3-1-0	4	C
EE407	Digital Signal Processing	3-0-0	3	D
EE409	Electrical Machine Design	3-0-0	3	E
	Elective 3	3-0-0	3	F
EE451	Seminar & Project Preliminary	0-1-4	2	S
EE431	Power system Lab	0-0-3	1	T

Total Credits = 22 Hours: 27Cumulative Credits= 162

Elective 3:-

1. EE461 Modern Operating Systems
2. EE463 Computer Aided Power Systems Analysis
3. EE465 Power Quality
4. EE467 Nonlinear Control Systems
5. EE469 Electric and Hybrid Vehicles

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SEMESTER - 8

Course Code	*Course Name*	*L-T-P*	*Credits*	*Exam Slot*
EE402	Special Electric Machines	3-0-0	3	A
EE404	Industrial Instrumentation &Automation	3-0-0	3	B
	Elective 4	3-0-0	3	C
	Elective 5 (Non Departmental)	3-0-0	3	D
EE492	Project		6	S

Total Credits = 18 **Hours: 29** **Cumulative Credits= 180**

Elective 4:-

1. EE462 Design of Digital Control Systems
2. EE464 FACTS
3. EE466 Digital Image Processing
4. EE468 Computer Networks
5. EE472 Internet of Things
6. EE474 Energy Management and Auditing

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 AGAIST GRAVITY
2. AE484	INSTRUMENTATION SYSTEM DESIGN
3. AU486	NOISE, VIBRATION AND HARSHNESS
4. BM482	BIOMEDICAL INSTRUMENTATION(EE 372 BIOMEDICAL INSTRUMENTATION)
5. BM484	MEDICAL IMAGING & IMAGE PROCESSING TECHNIQUES
6. BT461	DESIGN OF BIOLOGICAL WASTEWATER SYSTEMS
7. BT362	SUSTAINABLE ENERGY PROCESSES
8. CH482	PROCESS UTILITIES AND PIPE LINE DESIGN
9. CH484	FUEL CELL TECHNOLOGY
10. CE482	ENVIRONMENTAL IMPACT ASSESSMENT
11.CE484	APPLIED EARTH SYSTEMS
12.CE486	GEO INFORMATICS FOR INFRASTRUCTURE MANAGEMENT
13.CE488	DISASTER MANAGEMENT
14. CE494	ENVIRONMENT HEALTH AND SAFETY
15.CS482	DATA STRUCTURES (EE 362 DATA STRUCTURES AND ALGORITHMS)
16.CS484	COMPUTER GRAPHICS
17.CS486	OBJECT ORIENTED PROGRAMMING (EE 361OBJECT ORIENTED PROGRAMMING)
18.CS488	C # AND .NET PROGRAMMING
19. EC482	BIOMEDICAL ENGINEERING
20. FT482	FOOD PROCESS ENGINEERING
21. FT484	FOOD STORAGE ENGINEERING

22. FT486 FOOD ADDITIVES AND FLAVOURING

23.IE482 FINANCIAL MANAGEMENT

24. IE484 INTRODUCTION TO BUSINESS ANALYTICS

25.IE486 DESIGN AND ANALYSIS OF EXPERIMENTS

26. IE488 TOTAL QUALITY MANAGEMENT

27.IC482 BIOMEDICAL SIGNAL PROCESSING

28. IT482 INFORMATION STORAGE MANAGEMENT

29. MA482 APPLIED LINEAR ALGEBRA

30. MA484 OPERATIONS RESEARCH

31. MA486 ADVANCED NUMERICAL COMPUTATIONS

32. MA488 CRYPTOGRAPHY

33.ME484 FINITE ELEMENT ANALYSIS

34.ME482 ENERGY CONSERVATION AND MANAGEMENT (EE474 ENERGY MANAGEMENT AND AUDITING)

35.ME471 OPTIMIZATION TECHNIQUES

36.MP482 PRODUCT DEVELOPMENT AND DESIGN

37. MP469 INDUSTRIAL PSYCHOLOGY & ORGANIZATIONAL BEHAVIOUR

38. MP484 PROJECT MANAGEMENT

39. MT482 INDUSTRIAL SAFETY

40. MR482 MECHATRONICS

41. FS482 RESPONSIBLE ENGINEERING

42. SB482 DREDGERS AND HARBOUR CRAFTS

43. HS482 PROFESSIONAL ETHICS