



**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	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**

Mechanical Engineering

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BRANCH: Mechanical Engineering**SEMESTER - 3**

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA201	Linear Algebra & Complex Analysis	3-1-0	4	A
ME201	Mechanics of Solids	3-1-0	4	B
ME203	Mechanics of Fluids	3-1-0	4	C
ME205	Thermodynamics	3-1-0	4	D
ME210	Metallurgy & Materials Engineering	3-0-0	3	E
HS200/ HS210	Business Economics/Life Skills	3-0-0/ 2-0-2	3	F
ME231	Computer Aided Machine Drawing Lab	0-0-3	1	S
CE230	Material Testing 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
ME202	Advanced Mechanics of Solids	3-1-0	4	B
ME204	Thermal Engineering	3-1-0	4	C
ME206	Fluid Machinery	2-1-0	3	D
ME220	Manufacturing Technology	3-0-0	3	E
HS210/ HS200	Life Skills/Business Economics	2-0-2/ 3-0-0	3	F
ME232	Thermal Engineering Lab	0-0-3	1	S
ME230	Fluid Mechanics & Machines Lab	0-0-3	1	T

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

BRANCH: *Mechanical Engineering*

SEMESTER - 5

Course Code	Course Name	L-T-P	Credits	Exam Slot
ME301	Mechanics of Machinery	3-1-0	4	A
ME303	Machine Tools and Digital Manufacturing	3-0-0	3	B
ME305	Computer Programming & Numerical Methods	2-0-1	3	C
EE311	Electrical Drives & Control for Automation	3-0-0	3	D
HS300	Principles of Management	3-0-0	3	E
	Elective 1	3-0-0	3	F
ME341	Design Project	0-1-2	2	S
EE335	Electrical and Electronics Lab	0-0-3	1	T
ME331	Manufacturing Technology Lab I	0-0-3	1	U

Total Credits = 23

Hours: 28

Cumulative Credits= 117

- Elective 1:-**
1. ME361 Advanced Fluid Mechanics
 2. ME363 Composite Materials and Mechanics
 3. ME365 Advanced Metal Casting
 4. ME367 Non-Destructive Testing
 5. ME369 Tribology
 6. ME371 Nuclear Engineering
 7. ME373 Human Relations Management

BRANCH: *Mechanical Engineering*

SEMESTER - 6

Course Code	Course Name	L-T-P	Credits	Exam Slot
ME302	Heat & Mass Transfer	3-1-0	4	A
ME304	Dynamics of Machinery	2-1-0	3	B
ME306	Advanced Manufacturing Technology	3-0-0	3	C
ME308	Computer Aided Design and Analysis	3-0-0	3	D
ME312	Metrology and Instrumentation	3-0-0	3	E
	Elective 2	3-0-0	3	F
ME332	Computer Aided Design and Analysis Lab	0-0-3	1	S
ME334	Manufacturing Technology Lab II	0-0-3	1	T
ME352	Comprehensive Exam	0-1-1	2	U

Total Credits = 23

Hours: 27

Cumulative Credits= 140

Elective 2:-

1. ME362 Control System Engineering
2. ME364 Turbo Machinery
3. ME366 Advanced Metal Joining Technology
4. ME368 Marketing Management
5. ME372 Operations Research
6. ME374 Theory of Vibration
7. ME376 Maintenance Engineering

BRANCH: *Mechanical Engineering*

SEMESTER - 7

Course Code	Course Name	L-T-P	Credits	Exam Slot
ME401	Design of Machine Elements I	3-1-0	4	A
ME403	Advanced Energy Engineering	3-0-0	3	B
ME405	Refrigeration and Air Conditioning	2-1-0	3	C
ME407	Mechatronics	3-0-0	3	D
ME409	Compressible Fluid Flow	2-1-0	3	E
	Elective 3	3-0-0	3	F
ME451	Seminar & Project Preliminary	0-1-4	2	S
ME431	Mechanical Engineering Lab	0-0-3	1	T

Total Credits = 22

Hours: 27

Cumulative Credits= 162

Elective 3:-

1. ME461 Aerospace Engineering
2. ME463 Automobile Engineering
3. ME465 Industrial Hydraulics
4. IE306 Supply Chain and Logistics Management
5. ME467 Cryogenic Engineering
6. ME469 Finite Element Analysis
7. ME471 Optimization Techniques

BRANCH: *Mechanical Engineering***SEMESTER - 8**

Course Code	Course Name	L-T-P	Credits	Exam Slot
ME402	Design of Machine Elements II	3-0-0	3	A
ME404	Industrial Engineering	3-0-0	3	B
	Elective 4	3-0-0	3	C
	Elective 5 (Non Departmental)	3-0-0	3	D
ME492	Project		6	S

Total Credits = 18**Hours: 30****Cumulative Credits= 180****Elective 4:-**

1. ME462 Propulsion Engineering
2. ME464 Robotics and Automation
3. ME466 Computational Fluid Dynamics
4. ME468 Nanotechnology
5. ME472 Failure Analysis and Design
6. ME474 Micro and Nano Manufacturing
7. ME476 Material Handling & Facilities Planning

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. CE482 ENVIRONMENTAL IMPACT ASSESSMENT
13. CE484 APPLIED EARTH SYSTEMS
14. CE486 GEO INFORMATICS FOR INFRASTRUCTURE MANAGEMENT
15. CE488 DISASTER MANAGEMENT
16. CE494 ENVIRONMENT HEALTH AND SAFETY
17. CS482 DATA STRUCTURES
18. CS484 COMPUTER GRAPHICS
19. CS486 OBJECT ORIENTED PROGRAMMING
20. CS488 C # AND .NET PROGRAMMING
21. EE484 CONTROL SYSTEMS (ME 362/ CONTROL SYSTEM ENGINEERING)
22. EE486 SOFT COMPUTING

23. EE488	INDUSTRIAL AUTOMATION (ME464/ ROBOTICS AND AUTOMATION)
24. EE494	INSTRUMENTATION SYSTEMS
25. EC482	BIOMEDICAL ENGINEERING
26. FT482	FOOD PROCESS ENGINEERING
27. FT484	FOOD STORAGE ENGINEERING
28. FT486	FOOD ADDITIVES AND FLAVOURING
29.IE482	FINANCIAL MANAGEMENT
30. IE484	INTRODUCTION TO BUSINESS ANALYTICS
31.IE486	DESIGN AND ANALYSIS OF EXPERIMENTS
32. IE488	TOTAL QUALITY MANAGEMENT
33.IC482	BIOMEDICAL SIGNAL PROCESSING
34. IT482	INFORMATION STORAGE MANAGEMENT
35. MA482	APPLIED LINEAR ALGEBRA
36. MA484	OPERATIONS RESEARCH (ME 372/ OPERATIONS RESEARCH)
37. MA486	ADVANCED NUMERICAL COMPUTATIONS
38. MA488	CRYPTOGRAPHY
39.MP482	PRODUCT DEVELOPMENT AND DESIGN
40. MP469	INDUSTRIAL PSYCHOLOGY & ORGANIZATIONAL BEHAVIOUR
41. MP484	PROJECT MANAGEMENT
42. MT482	INDUSTRIAL SAFETY
43. FS482	RESPONSIBLE ENGINEERING
44. SB482	DREDGERS AND HARBOUR CRAFTS
45. HS482	PROFESSIONAL ETHICS