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

Naval Architecture and Ship Building

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

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BRANCH: *Naval architecture and Ship Building Engineering*

SEMESTER - 3

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA201	Linear Algebra & Complex Analysis	3-1-0	4	A
SB201	Mechanics of Solids	3-1-0	4	B
SB203	Mechanics of Fluids	3-1-0	4	C
SB205	Introduction To Naval Architecture & Ship Building	3-1-0	4	D
SB207	Basic Ship Theory	2-1-0	3	E
HS200/ HS210	Business Economics/Life Skills	3-0-0/ 2-0-2	3	F
ME237	Welding and Machine Tools Lab	0-0-3	1	S
SB231	Mechanics of Fluids 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
SB202	Resistance and Propulsion of Ships	3-1-0	4	B
SB204	Stability of Ships and Submarines	3-1-0	4	C
SB206	Analysis of Structures	2-1-0	3	D
EE214	Electrical Technology and Instrumentation	3-0-0	3	E
HS210/ HS200	Life Skills/Business Economics	2-0-2/ 3-0-0	3	F
SB232	Lines Plan and Hydrostatics Lab	0-0-3	1	S
ME238	Advanced Machine Tools Lab	0-0-3	1	T

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

BRANCH: *Naval architecture and Ship Building Engineering*

SEMESTER - 5

Course Code	*Course Name*	*L-T-P*	*Credits*	*Exam Slot*
SB301	Ship Dynamics	3-1-0	4	A
SB303	Structural Design of Ships	2-1-0	3	B
SB305	Offshore Structures	2-1-0	3	C
SB307	Strength of Ships I	2-1-0	3	D
SB309	Programming and Data Structures	2-1-0	3	E
	Elective 1	3-0-0	3	F
SB341	Design Project	0-1-2	2	S
EE339	Electrical Engineering Lab	0-0-3	1	T
SB331	Marine Hydrodynamics &Hydraulic Machinery Lab	0-0-3	1	U

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

Elective 1:-
1. SB361 Applied Thermodynamics
2. SB363 Marine Pollution, Control and Recovery Systems
3. SB365 Hydraulic Machinery
4. SB367 Inland Water Transportation

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SEMESTER - 6

Course Code	*Course Name*	*L-T-P*	*Credits*	*Exam Slot*
SB302	Ship Design I	3-1-0	4	A
SB304	Strength of Ships II	2-1-0	3	B
SB306	Material Science	3-0-0	3	C
SB308	Computer Aided Design, Drafting & Manufacturing	3-0-0	3	D
HS300	Principles of Management	3-0-0	3	E
	Elective 2	3-0-0	3	F
SB332	CAD/CAM Lab	0-0-3	1	S
CE336	Strength of Materials Lab	0-0-3	1	T
SB352	Comprehensive Exam	0-1-1	2	U

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

Elective 2:-

1. SB362 Maritime Law
2. SB364 Introduction to Subsea Pipelines
3. SB366 Experimental Techniques on Ships & Models
4. SB368 Submarines & Submersibles

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SEMESTER - 7

Course Code	*Course Name*	*L-T-P*	*Credits*	*Exam Slot*
SB401	Ship Design II	3-1-0	4	A
SB403	Marine Engineering	3-0-0	3	B
SB405	Design of Machine Components	2-1-0	3	C
SB407	Ship Production	3-0-0	3	D
SB409	Electrical Systems in Ships & Shipyards	3-0-0	3	E
	Elective 3	3-0-0	3	F
SB451	Seminar & Project Preliminary	0-1-4	2	S
SB431	Marine Engineering Lab	0-0-3	1	T

Total Credits = 22 Hours: 27 Cumulative Credits= 162

Elective 3:-

1. SB461 Ship Building Materials, Corrosion Prevention and Protection
2. SB463 Ship Recycling
3. SB465 Design of Fishing Vessels
4. SB467 Computer Aided Ship Design

BRANCH: *Naval architecture and Ship Building Engineering*

SEMESTER - 8

Course Code	*Course Name*	*L-T-P*	*Credits*	*Exam Slot*
SB402	Joining Techniques in Ship Building Technology	3-0-0	3	A
SB404	Ship Survey, Estimation and Repair	3-0-0	3	B
	Elective 4	3-0-0	3	C
	Elective 5 (Non Departmental)	3-0-0	3	D
SB492	Project		6	S

Total Credits = 18 **Hours: 30** **Cumulative Credits= 180**

Elective 4:-

1. SB462 Ship Production Management
2. SB464 Refrigeration and Air Conditioning of Ships
3. SB466 Ocean Wave Hydrodynamics
4. SB468 Finite Element Methods

ELECTIVE 5 (NON DEPARTMENTAL ELECTIVE COURSES)

1. AO482 FLIGHT AGAIST 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. CS484 COMPUTER GRAPHICS
18. CS486 OBJECT ORIENTED PROGRAMMING
19. CS488 C # AND .NET PROGRAMMING
20. EE482 ENERGY MANAGEMENT AND AUDITING
21. EE484 CONTROL SYSTEMS
22. EE486 SOFT COMPUTING
23. EE488 INDUSTRIAL 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

37. MA486 ADVANCED NUMERICAL COMPUTATIONS

38. MA488 CRYPTOGRAPHY

39.ME484 FINITE ELEMENT ANALYSIS(SB 468/ FINITE ELEMENT METHODS)

40.ME482 ENERGY CONSERVATION AND MANAGEMENT

41.ME471 OPTIMIZATION TECHNIQUES

42.MP482 PRODUCT DEVELOPMENT AND DESIGN

43. MP469 INDUSTRIAL PSYCHOLOGY & ORGANIZATIONAL BEHAVIOUR

44. MP484 PROJECT MANAGEMENT

45. MT482 INDUSTRIAL SAFETY

46. MR482 MECHATRONICS

47. FS482 RESPONSIBLE ENGINEERING

48. HS482 PROFESSIONAL ETHICS