Ph:+91-481-2710120, +91-481-2537053 +91-481-2533711, Fax: +91-481-2533700

Web : www.mangalam.ac.in E-mail : info@mangalam.in

-( Approved by AICTE, Affiliated to MGU / APJ Abdul Kalam Technological University, NAAC Accredited & ISO Certified Institution )

1.2.1.1. Number of Programmes in which CBCS / Elective course system implemented.

Programm e Code	Programme name	Year of Introduction	Status of implemetation of CBCS / elective course system (Yes/No)	Year of implementation of CBCS / elective course system
CE	B.Tech	2015	Yes	2020-21
CE	B.Tech	2019	Yes	2020-21
SECM	M.Tech	2015	Yes	2020-21
CSE	B.Tech	2015	Yes	2020-21
CSE	B.Tech	2019	Yes	2020-21
CSE	M.Tech	2015	Yes	2020-21
ECE	B TECH	2015	Yes	2020-21
ECE	B TECH	2019	Yes	2020-21
VLSI&ES	MTECH	2015	Yes	2020-21
EEE	B.Tech	2015	Yes	2020-21
PEPS	MTECH	2015	Yes	2020-21
ΛE	B.Tech	2015	Yes	2020-21
EM	M.Tech	2015	Yes	
ЛGT	MBA	2016	Yes	2020-21
			163	2020-21

PROFAL
ANGALAM COLLEGE OF ENGINEERING
Ettumanoor



## KERALA TECHNOLOGICAL UNIVERSITY

## Curriculum for Semesters I and II

2015

Kerala 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

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#### SEMESTER I

Slot	Course No.	Subject	L-T-P	Hours	Credits
A	MA101	Calculus	3-1-0	4	4
В	PH100	Engineering Physics	3-1-0	4	4
(1/2)	CY100	Engineering Chemistry	3-1-0	4	4
С	BE100	Engineering Mechanics	3-1-0	4	4
(1/2)	BE110	Engineering Graphics	1-1-2	4	3
D	BE101-0X	Introduction to Engineering	2-1-0	3	3
E	BE103	Introduction to Sustainable Engineering	2-0-1	3	3
1	CE100	Basics of Civil Engineering	2-1-0	3	3
F	ME100	Basics of Mechanical Engineering	2-1-0	3	3
(1/4)	EE100	Basics of Electrical Engineering	2-1-0	3	3
	EC100	Basics of Electronics Engineering	2-1-0	3	3
S	PH110	Engineering Physics Lab	0-0-2	2	1
(1/2)	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	1
U		U100 Language lab/ Bridge courses/ Remedial programmes/Micro Projects etc	0-0-3	3	
1				30	24/23
v		V100 Entrepreneurship/TBI/NCC/NSS/ Physical Edn. etc	0-0-2	2	Activity

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WANGALAM COLLEGE OF ENGINEERING
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#### Notes:

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

- BE101-01 Introduction to Civil Engineering
  Civil Engineering
- 2. BE101-02 Introduction to Mechanical Engineering Sciences

  Aeronautical Engineering, Automobile Engineering, Food Technology, Industrial

  Engineering, Marine Engineering, Mechanical Engineering, Mechanical Engineering

  (Automobile), Mechanical Engineering (Industry Integrated), Mechanical

  Engineering (Production), Mechatronics, Metallurgy, Naval Architecture & Ship

  Building Engineering, Printing Technology, Production Engineering, Textile

  Technology.
- 3. BE101-03 Introduction to Electrical Engineering
  Electrical & Electronics Engineering, Electrical Engineering

6. BE101-06 Introduction to Chemical Engineering

- 4. BE101-04 Introduction to Electronics Engineering
  Applied Electronics & Instrumentation Engineering, Biomedical Engineering,
  Electronics & Biomedical Engineering, Electronics, Electronics & Communication
  Engineering, Electronics & Communication Engineering (Industry Integrated),
  Electronics Engineering, Electronics & Instrumentation Engineering,
  Instrumentation & Control Engineering, Instrumentation Technology.
- BE101-05 Introduction to Computing and Problem Solving
   Computer Engineering, Computer Science & Engineering, Information Technology.
- 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

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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.

RWCIPAL Page 4 of 6

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.

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

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MANGALAM COLLEGE OF ENGINEERING
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### SEMESTER II

Slot	Course No.	Subject	L	-T-P	Hou	rs Credi
Α	MA102	Differential Equations	3	-1-0	4	4
В	PH100	Engineering Physics	3.	1-0-	4	4
(1/2)	CY100	Engineering Chemistry	3-	1-0	4	4
С	BE100	Engineering Mechanics	3-	1-0	4	4
(1/2)	BE110	Engineering Graphics		-2	4	3
D	BE102	Design & Engineering	2-0	-2	4	3
	CE 100	Basics of Civil Engineering	2-1	-0	3	3
E, F	ME 100	Basics of Mechanical Engineering	2-1-	0	3	3
(2/4)	EE 100	Basics of Electrical Engineering	2-1-	0	3	3
	EC 100	Basics of Electronics Engineering	2-1-	0	3	3
S	PH110	Engineering Physics Lab	0-0-2		2	1
(1/2)	CY110	Engineering Chemistry Lab	0-0-2		2	1
T (2/4)	CE110/ME110/ EE110/EC110	Basic Engineering Workshops	0-0-2		2	1
U		U100 Language lab / Bridge courses/ Remedial programmes/Micro Projects etc	0-0-2	2	2	1
		1. Jan 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	112	30	) 2	4/23
v		V100 Entrepreneurship /TBI/NCC/NSS/ Physical Edn. etc	0-0-2	2		tivity

Note: 1. Institutions can assign two of four Basics of Engineering courses not already taken by the student in the previous semester and the corresponding Workshop courses in Semester 2.

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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Curriculum

for

**B.Tech Degree** 

Semesters III to VIII

2016

Mechanical Engineering Estd.

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

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### SEMESTER - 3

Course Code	Course Name	L-T-P	Credits	Exam	瘤
Code	ADI ARDI	TT	11	Slot	194
MA201	Linear Algebra & Complex Analysis	3-1-0	14	T A A	/ Jan
ME201	Mechanics of Solids	3-1-0	八丁		Pitteans
ME203	Mechanics of Fluids	3-1-0		V <sub>O</sub>	
ME205	Thermodynamics	3-1-0	4	1 C	-
ME210	Metallurgy & Materials Engineering	3-0-0	3	D 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 41110	12 A	
otal Cred	lits = 24 Hours: 28/29	Cumula	1 live Cred	T  lits= 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	P
ME204	Thermal Engineering	3-1-0	A besiles	В
ME206	Fluid Machinery	A Contractor	4	С
ME220	Manufacturing Technology 2	2-1-0	/3	D
HS210/ HS200	Life Skills/Business Economics	2-0-2/	3	F E
ME232	Thermal Engineering Lab	3-0-0 0-0-3	7-1	S
ME230	Fluid Mechanics & Machines Lab	0-0-3	1	

Total Credits = 23

Hours 28/27

Cumulative Credits= 94

WANGALAM COLLEGE OF ENGINEERING

#### SEMESTER - 5

Course	Course Name	ELT:P	Credits	Exam
Code	ADT ARDI	II	KA	Slot
ME301	Mechanics of Machinery	3-1-0	14.	$(  \Delta )$
ME303	Machine Tools and Digital Manufacturing	3-0-0	SPT SPT	√B "
ME305	Computer Programming & Numerical Methods	2-0-1	3	С
EE311	Electrical Drives &Control for Automation	3-0-0	3	D 1
HS300	Principles of Management	3-0-0	3	Е
	Elective 1	3-0-0	3	F
ME341	Design Project	0-1-2	2	S
EE335	Electrical and Electronics Lab	0-0-3	1	Ţ
ME331	Manufacturing Technology Lab I	0-0-3	1	U

Total Credits = 23

Hours: 28

Cumulative Credits= 117

	The second secon	AND STATE OF THE PROPERTY OF T
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

PRINCIPAL
MANGALAM COLLEGE OF ENGINEERING
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#### SEMESTER - 6

Course Code	Course Name	[L-T-P	Credits	Exam \$lot
ME302	Heat & Mass Transfer	3-1-0	4	T AL I
ME304	Dynamics of Machinery	2-1-0-	3	J 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	ı.

Total Credits = 23

Hours: 27 Cumulative Credits= 140

#### Elective 2:-

Estd

1. ME362 Control System Engineering

Turbo Machinery 2. ME364

Advanced Metal Joining Technology 3. ME366

4. ME368 Marketing Management

**Operations Research** 5. ME372

6. ME374 Theory of Vibration

Maintenance Engineering 7. ME376

#### SEMESTER - 7

Course Code	Course Name	LaT-P	Credits	Exam Slot
ME401	Design of Machine Elements I	3-1-0	47	- A
ME403	Advanced Energy Engineering	3-0-0	= 3	В
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	Ē
	Elective 3	3-0-0	3	F
ME451	Seminar & Project Preliminary	0-1-4	2	S
ME431	Mechanical Engineering Lab	0-0-3	1	Τ.

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

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SEMESTER - 8

Code ME402	Design of Machine Elements II	L-T-P	Creaks	Exam S
ME404	Industrial Engineering	3-0-0	13( 13V	PAL
	Elective 4	3-0-0	3	B C
ME492	Elective 5 (Non Departmental)  Project	3-0-0	3	D

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

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### 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)

de V	ALL ABDUL VALAIN
J. AO482	FLIGHT AGAIST-GRAVITY
2. AE482	INDUSTRIAL INSTRUMENTATION D S T T
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 ESTATEMENT
14.CE486	GEO INFORMATICS FOR INFRASTRUCTURE MANAGEMENT
15.CE488	DISASTER MANAGEMENT
16. CE494	ENVIRONMENT HEALTH AND SAFETY
17.CS482	DATA STRUCTURES 2014
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

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MANGALAM COLLEGE OF ENGINEERING
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23. EE488	INDUSTRIAL AUTOMATION (ME464/ ROBOTICS AND AUTOMATION)
24. EE494	INSTRUMENTATION SYSTEMS
25. EC482	BIOMEDICAL ENGINEERING
26. FT482	FOOD PROCESS ENGINEERING TO A TOTAL A
27. FT484	FOOD STORAGE ENGINEERING
28. FT486	FOOD ADDITIVES AND FLAVOURING
29.IE482	FINANCIAL MANAGEMENT/ L D C T
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

WANGA EN COLLEGE OF CHEMEERING

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## KERALA TECHNOLOGICAL UNIVERSITY

## Curriculum for Semesters I and II

2015

Kerala 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

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MANGALAM COLLEGE OF ENGINEERING
Ettumanoor

### SEMESTER I

Slot	Course No.	Subject	L-T-P	Hours	Credi
Α	MA101	Calculus	3-1-0	4	4
В	PH100	Engineering Physics	3-1-0	4	4
(1/2)	CY100	Engineering Chemistry	3-1-0	4	4
С	BE100	Engineering Mechanics	3-1-0	4	4
(1/2)	BE110	Engineering Graphics	1-1-2	4	3
D	BE101-0X	Introduction to Engineering	2-1-0	3	3
Е	BE103	Introduction to Sustainable Engineering	2-0-1	3	3
	CE100	Basics of Civil Engineering	2-1-0	3	3
F	ME100	Basics of Mechanical Engineering	2-1-0	3	3
(1/4)	EE100	Basics of Electrical Engineering	2-1-0	3	3
	EC100	Basics of Electronics Engineering	2-1-0	3	3
S	PH110	Engineering Physics Lab	0-0-2	2	1
(1/2)	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	1
U		U100 Language lab/ Bridge courses/ Remedial programmes/Micro Projects etc	0-0-3	3	
	41.7	The state of the s		30	24/23
V		V100 Entrepreneurship/TBI/NCC/NSS/ Physical Edn. etc	0-0-2	2	Activity points

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CONTRAL ENGINEERING
WANGALAM COLLEGE OF ENGINEERING
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#### Notes:

1.	Basic	Engineering	course	of	the	parent	branch	included	as	Introduction	to
		Er	ngineerin	ıg. (:	3 cree	dits)	1.4	Francis S			

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

- BE101-01 Introduction to Civil Engineering
   Civil Engineering
- 2. BE101-02 Introduction to Mechanical Engineering Sciences
  Aeronautical Engineering, Automobile Engineering, Food Technology, Industrial
  Engineering, Marine Engineering, Mechanical Engineering, Mechanical Engineering
  (Automobile), Mechanical Engineering (Industry Integrated), Mechanical
  Engineering (Production), Mechatronics, Metallurgy, Naval Architecture & Ship
  Bullding Engineering, Printing Technology, Production Engineering, Textile
  Technology.
- 3. BE101-03 Introduction to Electrical Engineering
  Electrical & Electronics Engineering, Electrical Engineering
- 4. BE101-04 Introduction to Electronics Engineering
  Applied Electronics & Instrumentation Engineering, Biomedical Engineering,
  Electronics & Biomedical Engineering, Electronics, Electronics & Communication
  Engineering, Electronics & Communication Engineering (Industry Integrated),
  Electronics Engineering, Electronics & Instrumentation Engineering,
  Instrumentation & Control Engineering, Instrumentation Technology.
- BE101-05 Introduction to Computing and Problem Solving
   Computer Engineering, 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

Page 3 of 6

MANIBALAM COLLEGE OF 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.

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PRINCIPAL PAGE OF ENGINEERING EHUMANGALAM COLLEGE OF ENGINEERING

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.

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

PRINCIPAL MANGALAM COLLEGE OF ENGINEERING

### SEMESTER II

Slot	Course No.	Subject	L-T-	P H	ours	Credi	
Α	MA102	Differential Equations	3-1-		4		
В	PH100	Engineering Physics	3-1-0	-	4	4	
(1/2)	CY100	Engineering Chemistry	3-1-0		4	4	
C	BE100	Engineering Mechanics	3-1-0	-		4	
(1/2)	BE110	Engineering Graphics	1-1-2	-	_	3	
D	BE102	Design & Engineering	2-0-2	4		3	
	CE 100	Basics of Civil Engineering	2-1-0	3	+		
E, F	ME 100	Basics of Mechanical Engineering	2-1-0	3	-	3	
(2/4)	EE 100	Basics of Electrical Engineering	2-1-0	3	-	3	
	EC 100	Basics of Electronics Engineering	2-1-0	3		3	
S	PH110	Engineering Physics Lab	0-0-2	2		1,	
(1/2)	CY110	Engineering Chemistry Lab	0-0-2	2		1	
Т	CE110/ME110/	Basic Engineering Workshops	0-0-2	2	1	1	
2/4)	EE110/EC110		0-0-2	2		ı	
U		U100 Language lab / Bridge courses/ Remedial programmes/Micro Projects etc	0-0-2	2			
6				30	24/	23	
v		V100 Entrepreneurship /TBI/NCC/NSS/ Physical Edn. etc	0-0-2	2	Activ	4.00	

Note: 1. Institutions can assign two of four Basics of Engineering courses not already taken by the student in the previous semester and the corresponding Workshop courses in Semester 2.

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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Curriculum

for

**B.Tech Degree** 

Semesters III to VIII

2016

Electrical and Electronics Engineering Estd.

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

MANGALAM COLLEGE OF ENGINEERING

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#### SEMESTER - 3

Course	Course Name	L-T-P	Credits	Exam
Code	ADI ADINI	TI	VA	T Slot
MA201	Linear Algebra & Complex Analysis	3-1-0-	- 4	A
EE201	Circuits and, Networks	3-1-0-	4_	В
EE203	Analog Electronic Circuits	. 3-1-0	4	Vc
EE205	DC Machines and Transformers	3-1-0	4	i 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	Α
EE202	Synchronous and Induction Machines	10i 3-1-0	.4	В
EE204	Digital Electronics and Logic Design	2-1-0	3	C
EE206	Material Science	3-0-0	//3	D
EE208	Measurements and Instrumentation	184-0	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

ts=94

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#### SEMESTER - 5

Course	Course Name	L-T-P	Credits	Exam	2020
Code	ADI ARDI	TI	KΔ	T Slot	1
EE301	Power Generation, Transmission and Protection	3-1-0	$\mathcal{N}^{1}$	FAA	Y A
EE303	Linear Control Systems	2-1-0	$\hat{\gamma}\hat{\beta}$	VB	Manual
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	10.1

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

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MANGALAM COLLEGE OF ENGINEERING
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#### SEMESTER - 6

Course	Course Name	L-T-P	Gredits	Exam Slot
Code	APLARDI	II	CA	AN
EE302	Electromagnetics	2-1-0	(3.1	CAI
EE304	Advanced Control Theory	3-1-0	14	В
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		S
EE334	Power Electronics and Drives Lab	0-0-3	12000	T
EE352	Comprehensive Exam	0-1-1	2	<u>"</u>

Total Credits = 23

Hours: 27

Esto 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

PRINCIPAL ENGINEERING

#### SEMESTER - 7

Course	Course Name	L-T-P	Credits	Exam Slot
Code	ADIARDII	T	AT	$\Lambda \Lambda \Lambda$
EE401	Electronic communication	2-1-0	317	- X '
EE403	Distributed generation and smart grids	3-0-0	٠ اوات	/BL
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	. <u>2</u> -	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

MANGALAM COLLEGE OF ENGINEERING
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### SEMESTER - 8

6. EE474

Course	Course N	ame	THE PERSONS ASSESSED.	L-T-P	Cradita	-Even Cla
Code	ATT	ADINI	T	9 7	AT	Exam Slot
EE402	Special El	ectric Machines	1	-3-0-0	AL	411
EE404	Industrial &Automat	Instrumentation ion	ìÌ	3-0-0	13[	- R
	Elective 4	INIVI	Ì	3-0-0	3 Y	C
1	Elective 5	(Non Departmental)		3-0-0	3	Ď
EE492	Project			11 AND 11		
Total Credit	s = 18	Hours: 29	Cur	nulative (	6	S
Elective 4:-					reuits=	80 #3
A 1007	1. EE462	Design of Digital Co	ontrol	Systems		
	2. EE464	FACTS				
	3. EE466	Digital Image Proce	essing	1		
	4. EE468	Computer Network	III.			
	5. EE472	Internet of Things	0			

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Energy Management and Auditing

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### **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)

	APLARDIJI KALAM
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 3610BJECT ORIENTED PROGRAMMING)
18.CS488	C # AND .NET PROGRAMMING
19. EC482	BIOMEDICAL ENGINEERING
20. FT482	FOOD PROCESS ENGINEERING
21. FT484	FOOD STORAGE ENGINEERING  MANGALAM COLLEGE OF
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22. FT486	FOOD ADDITIVES AND FLAVOURING
23.IE482	FINANCIAL MANAGEMENT
24. IE484	INTRODUCTION TO BUSINESS ANALYTICS
25.IE486	DESIGN AND ANALYSIS OF EXPERIMENTS A T A
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 Estd.
40. MR482	MECHATRONICS
41. FS482	RESPONSIBLE ENGINEERING
42. SB482	DREDGERS AND HARBOUR CRAFTS
43. HS482	PROFESSIONAL ETHICS

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### KERALA TECHNOLOGICAL UNIVERSITY

## Curriculum for Semesters I and II

2015

Kerala 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

MANGALAM COLLEGE OF ENGINEERING

### SEMESTER I

Slot	Course No.	Subject	L-T-P	Hours	Credits
Α .	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	1-1-2	4	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/	Basic Engineering Workshops (CS110 for CS and related branches and	0-0-2	2	1
	CS110/CH110	CH110 for CH and related branches only)	0-0-2	2	1
U		U100 Language lab/ Bridge courses/ Remedial programmes/Micro Projects etc	0-0-3	3	
				30	24/23
V		V100 Entrepreneurship/TBI/NCC/NSS/ Physical Edn. etc	0-0-2	2	Activity points

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Page 2 of 6

#### Notes:

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

- BE101-01 Introduction to Civil Engineering
  Civil Engineering
- 2. BE101-02 Introduction to Mechanical Engineering Sciences
  Aeronautical Engineering, Automobile Engineering, Food Technology, Industrial
  Engineering, Marine Engineering, Mechanical Engineering, Mechanical Engineering
  (Automobile), Mechanical Engineering (Industry Integrated), Mechanical
  Engineering (Production), Mechatronics, Metallurgy, Naval Architecture & Ship
  Building Engineering, Printing Technology, Production Engineering, Textile
  Technology.
- 3. BE101-03 Introduction to Electrical Engineering
  Electrical & Electronics Engineering, Electrical Engineering
- 4. BE101-04 Introduction to Electronics Engineering
  Applied Electronics & Instrumentation Engineering, Biomedical Engineering,
  Electronics & Biomedical Engineering, Electronics, Electronics & Communication
  Engineering, Electronics & Communication Engineering (Industry Integrated),
  Electronics Engineering, Electronics & Instrumentation Engineering,
  Instrumentation & Control Engineering, Instrumentation Technology.
- BE101-05 Introduction to Computing and Problem Solving
   Computer Engineering, 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

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Page 3 of 6

OF 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 Warkshop, students opting Introduction to Mechanical Engineering or Basics of Mechanical Engineering should attend the Mechanical Engineering Warkshop, students opting Introduction to Chemical Engineering should attend the Chemical Engineering Warkshop and students opting Introduction to Computing and Problem Solving should attend the Computer Science Warkshop 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.

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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.

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

MANGALAM COLLEGE OF ENGINEERING

#### SEMESTER II

Slot	Course No.	Subject	L-T-P	Hours	Credit
Slot	1 11 11	1 4. 14.	3-1-0	4	4
A	MA102	Differential Equations	3-1-0	4	4
B (1/2)	PH100 ·	Engineering Physics	250 10 74	4	4
	CY100	Engineering Chemistry	3-1-0	1/2	3,167
C (1/2)	BE100	Engineering Mechanics	3-1-0	4	4
	BE110	Engineering Graphics	1-1-2	4	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
S (1/2)	PH110	Engineering Physics Lab	0-0-2	2	1
	CY110	Engineering Chemistry Lab	0-0-2	2	1
Т	CE110/ME110/ EE110/EC110	Basic Engineering Workshops	0-0-2	2	1
(2/4)			+		
(2/4)	LB110/LC110	- 10 M	0-0-2	2	1
U		U100 Language lab / Bridge courses/ Remedial programmes/Micro Projects etc	0-0-2	2	
		ar and a second of	[n ]i	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 Basics of Engineering courses not already taken by the student in the previous semester and the corresponding Workshop courses in Semester 2.

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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Curriculum

for

**B.Tech Degree** 

Semesters III to VIII

2016

Electronics and Communication Engineering Estd.

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



### SEMESTER - 3

Course	Course Name	L-T-P	Credits	Exam	-
Code	ADIADINI	TT	VA	7 Slot	
MA201	Linear Algebra & Complex Analysis	3-1-0	X	L Ā L	/
EC201	Network Theory	3-1-0_	141	LB/	-
EC203	Solid State Devices	- 3-1-0	41	Vc	
EC205	Electronic Circuits	3-1-0	4	, D	
EC207	Logic Circuit Design	3-0-0	3	E	TO THE REAL PROPERTY.
HS200/ HS210	Business Economics/Life Skills	3-0-0/ 2-0-2	3	F	
EC231	Electronic Devices & Circuits Lab	0-0-3	1	S	
EC233	Electronic Design Automation Lab	0-0-3	1	Ţ	

Total Credits = 24

Hours: 28/29

Cumulative Credits= 71

### SEMESTER - 4

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA204	Probability, Random Processes and Numerical Methods	3-1-0	4	A
EC202	Signals & Systems	3-1-0	4	В
EC204	Analog Integrated Circuits	4-0-0	4	C/
EC206	Computer Organization	3-0-0	3	D
EC208	Analog Communication Engineering	3-0-0	/3	E
HS210/ HS200	Life Skills/Business Economics	2-0-2 <i>l</i> 3-0-0	3	F
EC232	Analog Integrated Circuits Lab	0-0-3	1	S
EC230	Logic Circuit Design Lab	0-0-3	1	T

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

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### SEMESTER - 5

Course	Course Name	L-T-P	Credits	Exam
Code	ADIARINI	TT	$V\Lambda$	Slot
EC301	Digital Signal-Processing	3-1-0-	VA.	A A
EC303	Applied Electromagnetic Theory	3-0-0	3	V <sup>B</sup>
EC305	Microprocessors & Microcontrollers	3=0=0	3	C
EC307	Power Electronics & Instrumentation	3-0-0	3	D
HS300	Principles of Management	3-0-0	3	î E
100	Elective 1	3-0-0	3	F
EC341	Design Project	0-1-2	2	S
EC333	Digital Signal Processing Lab	0-0-3	1	T.
EC335	Power Electronics & Instrumentation Lab	0-0-3	1	ΰ

Total Credits = 23

Hours: 28

Cumulative Credits= 117

Digital System Design Elective 1:- 1. EC361

> Optimization Techniques 2. EC363

Biomedical Engineering 3. EC365

Soft Computing 2014 4. EC360

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### SEMESTER - 6

Course Code	Course Name	L-T-P	Credits	Exam Slot
EC302	API ABDU		(A	AN
EC304	Digital Communication	4-0-0	4	CAI
	VLSI UNIV	3-0-0	3	Ýв
EC306	Antenna & Wave Propagation	3-0-0	3	C
EC308	Embedded System	3-0-0	3	D
EC312	Object Oriented Programming	3-0-0	3	A E
	Elective 2	3-0-0	3	F
EC332	Communication Engg Lab (Analog& Digital)	-0-0-3	1	- S
EC334	Microcontroller Lab	0-0-3		A STATE OF THE STA
EC352	Comprehensive Exam	0-1-1	2	T U

Hours: 27

Es Cumulative Credits= 140

### Elective 2:-

1. EC362 Modelling & Simulation of Communication Systems

2. EC366 Real Time Operating Systems

3. EC368 Robotics

4. EC370 Digital Image Processing

MANGALAM COLLEGE OF ENGINEERING
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### **SEMESTER - 7**

Course	Course Name	L-T-P Credit	ts Exam Slot
Code	ADIABINI	T LEA	TAKA
EC401	Information Theory & Coding	で送び	火火
EC403	Microwave & Racat Enggl	300 13	MAL
EC405	Optical Communication V [	G-0-0 3	Y c
EC407	Computer Communication	3-0-0 3	D
EC409	Control Systems	3-0-0 3	E
	Elective 3	3-0-0 3	F
EC451	Seminar & Project Preliminary	0-1-4 2	- s
EC431	Communication Systems Lab (Optical & Microwave)	0-0-3 1	Τ

Total Credits = 22

Hours: 27

Cumulative Credits= 162

#### Elective 3:-

1. EC461 Microwave Devices and Circuits

2. EC463 Speech and Audio Signal Processing

3. EC465 MEMS

4. EC467 Pattern Recognition

5. EC469 Opto Electronic Devices

OS III -

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FOOD STORAGE ENGINEERING	17
FOOD ADDITIVES AND FLAVOURING	
FINANCIAL MANAGEMENT	
INTRODUCTION TO BUSINESS ANALYTICS	
DESIGN AND ANALYSIS OF EXPERIMENTS	
' TOTAL QUALITY MANAGEMENT	**
BIOMEDICAL SIGNAL PROCESSING	
INFORMATION STORAGE MANAGEMENT	
APPLIED LINEAR ALGEBRA	Tage -
OPERATIONS RESEARCH (EC 363 OPTIMISATION TECHNIQUES)	
ADVANCED NUMERICAL COMPUTATIONS	
CRYPTOGRAPHY	
FINITE ELEMENT ANALYSIS	
ENERGY CONSERVATION AND MANAGEMENT	
OPTIMIZATION TECHNIQUES (EC 363 OPTIMISATION TECHNIQUES)	
PRODUCT DEVELOPMENT AND DESIGN	
INDUSTRIAL PSYCHOLOGY & ORGANIZATIONAL BEHAVIOUR	HALL T
PROJECT MANAGEMENT Estd.	
INDUSTRIAL SAFETY	
MECHATRONICS	
RESPONSIBLE ENGINEERING	
DREDGERS AND HARBOUR CRAFTS	-
PROFESSIONAL ETHICS	IA I
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	FOOD ADDITIVES AND FLAVOURING  FINANCIAL MANAGEMENT  INTRODUCTION TO BUSINESS ANALYTICS  DESIGN AND ANALYSIS OF EXPERIMENTS  TOTAL QUALITY MANAGEMENT  BIOMEDICALISIGNAL PROCESSING  INFORMATION STORAGE MANAGEMENT  APPLIED LINEAR ALGEBRA  OPERATIONS RESEARCH (EC 363 OPTIMISATION TECHNIQUES)  ADVANCED NUMERICAL COMPUTATIONS  CRYPTOGRAPHY  FINITE ELEMENT ANALYSIS  ENERGY CONSERVATION AND MANAGEMENT  OPTIMIZATION TECHNIQUES (EC 363 OPTIMISATION TECHNIQUES)  PRODUCT DEVELOPMENT AND DESIGN  INDUSTRIAL PSYCHOLOGY & ORGANIZATIONAL BEHAVIOUR  PROJECT MANAGEMENT ESTC.  INDUSTRIAL SAFETY  MECHATRONICS  RESPONSIBLE ENGINEERING  OTAL  O



### KERALA TECHNOLOGICAL UNIVERSITY

# Curriculum for Semesters I and II

2015

Kerala 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

MANGALAM COLLEGE OF ENGINEERING Ettumanoor

### SEMESTER I

Slot	Course No.	Subject	L-T-P	Hours	Credit
A	MA101	Calculus	3-1-0	4	4
В	PH100	Engineering Physics	3-1-0	4	4
(1/2)	CY100	Engineering Chemistry	3-1-0	4	4
C	BE100	Engineering Mechanics	3-1-0	4	
(1/2)	BE110	Engineering Graphics	1-1-2	4	4
D	BE101-0X	Introduction to Engineering	2-1-0	3	3
E	BE103	Introduction to Sustainable Engineering	2-0-1	3	3
	CE100	Basics of Civil Engineering	2-1-0	3	3
F	ME100	Basics of Mechanical Engineering	2-1-0	3	3
(1/4)	EE100	Basics of Electrical Engineering	2-1-0	3	3
	EC100	Basics of Electronics Engineering	2-1-0	3	3
S	PH110	Engineering Physics Lab	0-0-2	2	3
(1/2)	CY110	Engineering Chemistry Lab	0-0-2	-	1
T (24)	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	2	1
υ			0-0-2	2	1
0		U100 Language lab/ Bridge courses/ Remedial programmes/Micro Projects etc	0-0-3	3	
				30	24/23
v		V100 Entrepreneurship/TBI/NCC/NSS/ Physical Edn. etc	0-0-2	2	Activity points

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#### Notes:

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

- BE101-01 Introduction to Civil Engineering Civil Engineering
- 2. BE101-02 Introduction to Mechanical Engineering Sciences
  Aeronautical Engineering, Automobile Engineering, Food Technology, Industrial
  Engineering, Marine Engineering, Mechanical Engineering, Mechanical Engineering
  (Automobile), Mechanical Engineering (Industry Integrated), Mechanical
  Engineering (Production), Mechatronics, Metallurgy, Naval Architecture & Ship
  Building Engineering, Printing Technology, Production Engineering, Textile
  Technology.
- BE101-03 Introduction to Electrical Engineering
   Electrical & Electronics Engineering, Electrical Engineering

6. BE101-06 Introduction to Chemical Engineering

- 4. BE101-04 Introduction to Electronics Engineering
  Applied Electronics & Instrumentation Engineering, Biomedical Engineering,
  Electronics & Biomedical Engineering, Electronics, Electronics & Communication
  Engineering, Electronics & Communication Engineering (Industry Integrated),
  Electronics Engineering, Electronics & Instrumentation Engineering,
  Instrumentation & Control Engineering, Instrumentation Technology.
- BE101-05 Introduction to Computing and Problem Solving
   Computer Engineering, Computer Science & Engineering, Information Technology.
- 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

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MANGALAM COLLEGE

A 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, stackents opting Introduction to Civil Engineering or Basics of Civil Engineering should attend the Civil Engineering Workshop, students opting Introduction to Machanical Engineering or Basics of Mechanical Engineering should attend the Machanical 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 I, 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.

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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.

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

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MANGALAM COLLEGE OF ENGINEERING
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### SEMESTER II

Slot	Course No.	Subject	L-T-P	Hours	Credi
A	MA102	Differential Equations	3-1-0	4	4
В	PH100	Engineering Physics	3-1-0	4	4
(1/2)	CY100	Engineering Chemistry	3-1-0	4	4
С	BE100	Engineering Mechanics	3-1-0	4	4
(1/2)	BE110	Engineering Graphics	1-1-2	4	3
D	BE102	Design & Engineering	2-0-2	4	3
	CE 100	Basics of Civil Engineering	2-1-0	3	3
E, F	ME 100	Basics of Mechanical Engineering	2-1-0	3	3
(2/4)	EE 100	Basics of Electrical Engineering	2-1-0	3	3
	EC 100	Basics of Electronics Engineering	2-1-0	3	3
S	PH110	Engineering Physics Lab	0-0-2	2	1
(1/2)	CY110	Engineering Chemistry Lab	0-0-2	2	1
T (2/4)	CE110/ME110/ EE110/EC110	Basic Engineering Workshops	0-0-2 + 0-0-2	2	1
U	- A- 412	U100 Language lab / Bridge courses/ Remedial programmes/Micro Projects etc	0-0-2	2	•
	dha e			30	24/23
V	1	V100 Entrepreneurship /TBI/NCC/NSS/ Physical Edn. etc	0-0-2	2	Activity points

Note: 1. Institutions can assign two of four Basics of Engineering courses not already taken by the student in the previous semester and the corresponding Workshop courses in Semester 2.

WANGALAM COLLEGE OF BIOTHEEPING
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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Curriculum

for

**B.Tech Degree** 

Semesters III to VIII

2016

Computer Science and Engineering Estd.

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

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### SEMESTER - 3

Course Code	A DI A DI	L-T-P	Credits	Exam Slot	N
MA201	Linear Algebra & Complex Analysis	3-1-0	1/47	CAA	I
CS201	Discrete Computational Structures	3-1-0	Z.A.	VB	1 L
CS203	Switching Theory and Logic Design	3-1-0			
CS205	Data Structures	3-1-0	4	D	1
CS207	Electronics Devices & Circuits	3-0-0	3	Ē	
HS210/ HS200	Life Skills/Business Economics	2-0-2/	3	E	
CS231	Data Structures Lab	3-0-0			
CS233	Electronics Circuits Lab	0-0-3	1	S	

otal Credits = 24

Hours: 28/29

Cumulative Credits= 71

### SEMESTER - 4

Course	Course Name	L-T-P	0.7-114	
Code		Lever to the second	Creans	Exam Slot
MA202	Methods	3-1-0	4	Α
CS202	Computer Organization and Architecture	3-1-0	4	В
CS204	Operating Systems	3-1-0	1 年 1	
CS206	Object Oriented Design and Programming	2-1-0	3	C D
CS208	Principles of Database Design	2-1-0	3	E
HS210/ HS200	Life Skills/Business Economics	2-0-2/ 3-0-0	3	F
CS232	Free and Open Source Software Lab	0-0-3	1	S
CS234	Digital Systems Lab	0-0-3	1	

Total Credits = 23

Hours 28/27

Cumulative Credits= 94



SEMES	TER-5		Total or other state of		on annual
Course Code	ADI ARITI	1.10	Gredits	Exam Slot	M
CS301	Theory of Computation	371,0	沿	YA	L.
C\$303	System Software	2-1-0	3 1	]  B	
CS305	Microprocessors and Microcontrollers	2-1-0	3	C	
CS307	Data Communication	3-0-0	3	D	
CS309	Graph Theory and Combinatorics	2-0-2	3	E	
	Elective 1	3-0-0	3	F	
CS341	Design Project	0-1-2	2	S	
CS331	System Software Lab	0-0-3	1	Ţ	THE STATE OF THE S
CS333	Application Software Development Lab	0-0-3	1	U	7

Total Credits = 23

Hours: 29 Cumulative Credits= 117

Elective 1:- 1. CS361 Soft Computing
2. CS363 Signals and Systems

3. CS365 Optimization Techniques

4. CS367 Logic for Computer Science

5. CS369 Digital System Testing & Testable Design

PRINCIPAL Enumanoor ENGINEERING

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### SEMESTER - 6

Course	Course Name	L-T-P	Credits	Exam Slot
Code	APLARDI	Ī	CA	AN
CS302	Design and Analysis of Algorithms	3-(1-0)	GI	CAL
CS304	Compiler Design	3-0-0	] 3	<b>У</b> в
CS306	Computer Networks	3-0-0	3	С
CS308	Software Engineering and Project Management	3-0-0	3	D
HS300	Principles of Management	3-0-0	3	-\E 100
	Elective 2	3-0-0	3	F
CS332	Microprocessor Lab	0-0-3	1	S
CS334	Network Programming Lab	:0-0-3	1	T
CS352	Comprehensive Exam	0-1-1	2	U

Total Credits = 23

Hours: 27

EST Cumulative Credits= 140

#### Elective 2:-

1. CS362 Computer Vision

2. CS364 Mobile Computing 2014

3. CS366 Natural Language Processing

4. CS368 Web Technologies

5. CS372 High Performance Computing

MANGALAM COLLEGE OF ENGINEERING

### SEMESTER - 7

omputer Graphics rogramming Paradigms	4-0-0 3-0-0	.A.L -4[( ∪3!(	A I
rogramming Paradigms	3-0-0	4[ ( 3[ (	AI
TINITE	0	<u>3</u>	B
	- "		,
omputer System Architecture	3-0-0	3	С
istributed Computing	3-0-0	3	D.
ryptography and Network ecurity	3-0-0	3	Е
lective 3	3-0-0	3	F
eminar & Project Preliminary	0-1-4	2	S
ampiler Design Lab	0-0-3	1	T
THE PERSON NAMED IN COLUMN 1		eminar & Project Preliminary 0-1-4 ompiler Design Lab 0-0-3	eminar & Project Preliminary 0-1-4 2

### Elective 3:-

Computational Geometry 1. CS461

Digital Image Processing 2. CS463

Bio Informatics 3. CS465

Machine Learning 4. CS467

Computational complexity 5. CS469



SEMESTER 8

Course Code	Course Name	L-T-P	A I	1 1 1
CS402	Data Mining and Ware Housing	11	T (	Exam Sic
CS404	Embeddod Systems	T) CI	13	PAL
	Elective 4	3-0:0	3 Y	В
	Elective 5 (Non Departmental)	3-0-0	3	С
CS492	From	3-0-0	3	D
Total Cred	Ilts = 18 Hours: 30		6	S
ective 4:-		Gumula	itive Cred	its= 180

- 1. CS462 Fuzzy Set Theory and Applications 2. CS464
- Artificial Intelligence 3. CS466
- Data Science 4. CS468
- Cloud Computing
- 5. CS472 Principles of Information Security

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### 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)

	A Line of the last
1, AO482	FLIGHT AGAIST GRAVITY UL KALAM
2. AE482	INDUSTRIAL INSTRUMENTATION
3. AE484	INSTRUMENTATION SYSTEM DESIGN T
4. AU486	NOISE, VIBRATION AND HARSHNESS
5. BM482	BIOMEDICAL INSTRUMENTATION
6. BM484	MEDICAL IMAGING & IMAGE PROCESSING TECHNIQUES
7. BT461	DESIGN OF BIOLOGICAL WASTE WATER SYSTEMS
8. BT362	SUSTAINABLE ENERGY PROCESSES
9. CH482	PROCESS UTILITIES AND PIPE LINE DESIGN
10. CH484	FUEL CELL TECHNOLOGY
11. CE482	ENVIRONMENTAL IMPACT ASSESSMENT
12. CE484	APPLIED EARTH SYSTEMS
13. CE486	GEO INFORMATICS FOR INFRASTRUCTURE MANAGEMENT
14. CE488	DISASTER MANAGEMENT F5td.
15. CE494	ENVIRONMENT HEALTH AND SAFETY
16. EE482	ENERGY MANAGEMENT AND AUDITING
17. EE484	CONTROL SYSTEMS
18. EE486	SOFT COMPUTING (CS 361 SOFT COMPUTING)
19. EE488	INDUSTRIAL AUTOMATION
20. EE494	INSTRUMENTATION SYSTEMS
21. EC482	BIOMEDICAL ENGINEERING
22. FT482	FOOD PROCESS ENGINEERING
23. FT484	FOOD STORAGE ENGINEERING

MANGALAM COLLEGE OF ENGINEERING

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### KERALA TECHNOLOGICAL UNIVERSITY

# Curriculum for Semesters I and II

2015

Kerala 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

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# SEMESTER I

Slot	Course No.	Subject	1-1-1	Hears	Credit
A	MA101	Calculus	3-1-0	1	4
В	PHIO	Elgrinerrity Phone's	3-1-0	1	1
(1/2)	CX100	Elgeinerrige Chemistry	3-1-0	4	1
C	BE100	Elgrineering Mendamin	3-1-0	1	4
(1/2)	BE110	Egricerity Ospethin	142	1	3
D	BE101-0X	Introduction to Beginnering	210	3	3
E	BE103	Marchert Andrewal in wireduring	20-1	3	3
	CE100	Revis of Ovil Elgennesign	210	3	3
F	ME100	Basis of Mechanical Elgebrosing	210	3	3
(1/4)	EE100	Basis of Electrical Electrority	240	3	3
	EC100	Busics of Electronics Elgeberring	240	3	3
S	PH110	Engineering Physics Lab	002	2	1
(1/2)	CY110	Engineering Chemistry Lab	002	2	1
T (2/4)	CE110/ME110/ EE110/EC110/ CS110/CH110	Rusic Engineering Workshops (CS110 for CS and related branches and CH110 for CH and related branches only)	002	2 2	1
U	N A	U100 Language lab/ Bridge courses/ Remedial programmes/Micro Projects etc	0.0.3	3	-
1			A COLUMN TO SERVICE OF STRANG	30	24/23
V		V100 Entrepreneurship/TBI/NCC/NSS/ Physical Edn. etc	0.0-2	122	soms custo.



### 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
- 2. BE101-02 Introduction to Mechanical Engineering Sciences Aeronautical Engineering, Automobile Engineering, Food Technology, Industrial Engineering, Marine Engineering, Mechanical Engineering, Mechanical Engineering (Automobile), Mechanical Engineering (Industry Integrated), Mechanical Engineering (Production), Mechatronics, Metallurgy, Naval Architecture & Ship Building Engineering, Printing Technology, Production Engineering, Textile Technology.
- 3. BE101-03 Introduction to Electrical Engineering Electrical & Electronics Engineering, Electrical Engineering
- 4. BE101-04 Introduction to Electronics Engineering Applied Electronics & Instrumentation Engineering, Biomedical Engineering, Electronics & Biomedical Engineering, Electronics, Electronics & Communication Engineering, Electronics & Communication Engineering (Industry Integrated), Electronics Engineering, Electronics & Instrumentation Engineering, Instrumentation & Control Engineering, Instrumentation Technology.
- 5. BE101-05 Introduction to Computing and Problem Solving Computer Engineering, 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

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MANGALAM COLLEGE OF 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 workshop, students opting Introduction to Chemical Engineering should attend the Mechanical 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.

MANGALAM COLLEGE OF ENGINEERIND

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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.

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

### **CURRICULUM I TO VIII: B.TECH CIVIL ENGINEERING**

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

SI.	Category	Code	Credit
No	ADLARDILL KAL	A A	A 8
1	Humanities and Social Sciences including Management courses	- A	26
2	Basic Science courses	BSC	Jane 18
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		. 20	14		50		- 2
Credits for Activity				-2			i di		162
G.Total				The second					162

MANGALAM COLLEGE OF ENGINEERING

#### CIVIL ENGINEERING

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, , Design Engineering, Materials Engineering etc.

Humanities and Social Sciences including Management courses: English, Humanities, Professional Communication, Management, Finance & Accounting, Life Skills, Professional Communication, Economics etc.

Mandatory non-credit courses: Sustainable Engineering, Constitution of India/Essence of Indiar 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 E C L 2 0 1. 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
Т	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.

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### 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
NO		AO	20	Food Technology	FT
1	Aeronautical Engg	4/1	21	Humanities	HU
2	Applied Electronics & Instrumentation	I AÉ L	WEST SHOWS	A CONTRACTOR OF THE CONTRACTOR	IE
3	Artificial Intelligence	AI	22	Industrial Engg	
4	Artificial Intelligence & Data Science	AD	23	Information Technology	IT
5	Automobile	AU	24	Instrumentation & Control	IC
6	Biomedical Engg	BM	25	Mandatory Courses	МС
7	Biotechnology	вт	26	Mathematics	MA
8	Chemical Engg	СН	27	Mechanical Engg	ME
9	Chemistry	CY	28	Mechatronics	MR
	Civil Engg	CE	29	Metallurgy	MT
10	Computer Science	CS	30	Mechanical (Auto)	MU
11	Computer Science (Artificial	CAE	td!	Mechanical (Prod)	MP
13	Intelligence) Computer Science (Artificial Intelligence & Machine Learning)	СМ	32	Naval & Ship Building	SB
14	Computer Science (Data Science)	CD	33	Physics	PH
15	Computer Science Cyber Security	CC	34	Polymer Engg	PO
16	Electronics & Biomedical	EB	35	Production Engg	PE
17	Electronics & Communication	EC.	36	Robotics and Automation	RA
18	Electrical and Computer Engineering	ЕО	37	Safety & Fire Engg	FS
19		EE			

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#### SEMESTER I

MESTE	COURSE	COURSES	L-T-P	HOUR S	CREDI
SLO			3-1-0	4	4
Т	NO.	LINEAR ALGEBRA AND	3-1-0	1	
Α	MAT 101	CALCULUS	3-1-0	4	4
В	PHT 110	ENGINEERING PHYSICS B	a T	t <sub>1</sub> L	i
1/2	# T3	ENGINEERING CHEMISTRY	3-1-0	44	4
	CYT 100	I had been been the own	2-1-0	3, 1	3
C	EST 100"	ENGINEERING MECHANICS	TIL		* 3
1/2	EST 110	ENGINEERING GRAPHICS	2-0-2	4	
	EST 120	BASICS OF CIVIL &	4-0-0	4	4
D 1/2	THE CAN WARE	MECHANICAL ENGINEERING	4-0-0	4	4
	EST 130	BASICS OF ELECTRICAL & ELECTRONICS ENGINEERING	<b>建</b>	4	
E	HUN 101	LIFE SKILLS	2-0-2	4	
S	PHL 120	ENGINEERING PHYSICS LAB	0-0-2	2	, 1
1/2	CYL 120	ENGINEERING CHEMISTRY LAB	0-0-2	2	1
	430	<b>接种类型的工作的</b> 《一个一个主要概念》	0-0-2	2	1
T	ESL 120	CIVIL & MECHANICAL WORKSHOP	0.0.2	2	1
1/2	ESL 130	ELECTRICAL & ELECTRONICS	0-0-2		
		WORKSHOP TOTAL		23/24 *	17

\*Minimum hours per week

To make up for the hours lost due to induct on program, one extra hour may be NOTE:

each course

allotted to



#### SEMESTER II

COURSE NO.	COURSES	L-T-P	HOUR S	CRED T
	VECTOR CALCULUS	3-1-0	4	4
	DIEEERENTIAL		OF MARKET	R.
A IN	EQUATIONS AND TRANSFORMS	3-1-0	1 41	4
PHT 110	ENGINEERING PHISIOSIS	The heard	TIA	4
CYT 100	ENGINEERING CHEMISTRY	3-1-0		4
EQT 100	FINGINEERING MECHANICS	2-1-0	£ 31. 1	- 3
	I I A I I Y L I I K L	2-0-2	4	3
EST 110	ENGINEERING GRAPHICS	L Z L	CONTRACTOR OF STREET	
EST 120	BASICS OF CIVIL & MECHANICAL	4-0-0	4	4
	ENGINEERING PACIFICAL &	4-0-0	4	4
EST 130	ELECTRONICS ENGINEERING			
HUN 102	PROFESSIONAL COMMUNICATION	2-0-2	4	-
EST 102	PROGRAMMING IN C	2-1-2	5. <sub>10</sub>	4
PHL 120	ENGINEERING PHYSICS LAB	0-0-2	2	1
CYL 120	ENGINEERING CHEMISTRY LAB	0-0-2	2	1
ESL 120	CIVIL & MECHANICAL WORKSHOP	0-0-2	2	1
FSI 130	ELECTRICAL & ELECTRONICS	0-0-2	2	1
DE TOUR	WORKSHOP TOTAL		28/29	21
	NO.  MAT 102  PHT 110  CYT 100  EST 100  EST 110  EST 120  EST 120  EST 120  CYL 120  CYL 120	MAT 102 VECTOR CALCULUS, DIFFERENTIAL EQUATIONS AND TRANSFORMS PHT 110 ENGINEERING PHYSICS B  CYT 100 ENGINEERING CHEMISTRY  EST 100 ENGINEERING MECHANICS  EST 110 ENGINEERING GRAPHICS  EST 120 BASICS OF CIVIL & MECHANICAL ENGINEERING EST 130 BASICS OF ELECTRICAL & ELECTRONICS ENGINEERING  HUN 102 PROFESSIONAL COMMUNICATION  EST 102 PROGRAMMING IN C  PHL 120 ENGINEERING PHYSICS LAB  CYL 120 ENGINEERING CHEMISTRY LAB  ESL 120 CIVIL & MECHANICAL WORKSHOP  ESL 130 ELECTRICAL & ELECTRONICS WORKSHOP	COURSE NO.  MAT 102 VECTOR CALCULUS, DIFFERENTIAL EQUATIONS AND TRANSFORMS PHT 110 ENGINEERING PHYSICS B 3-1-0  CYT 100 ENGINEERING CHEMISTRY 3-1-0  EST 100 ENGINEERING MECHANICS 2-1-0  EST 110 ENGINEERING GRAPHICS 2-0-2  EST 120 BASICS OF CIVIL & MECHANICAL 4-0-0 ENGINEERING ELECTRICAL & 4-0-0 ELECTRONICS ENGINEERING 4-0-0  HUN 102 PROFESSIONAL COMMUNICATION  EST 102 PROGRAMMING IN C 2-1-2  PHL 120 ENGINEERING PHYSICS LAB 0-0-2  CYL 120 ENGINEERING CHEMISTRY LAB 0-0-2  ESL 120 CIVIL & MECHANICAL WORKSHOP 0-0-2  ESL 130 ELECTRICAL & ELECTRONICS 0-0-2  WORKSHOP	COURSE NO.  MAT 102 VECTOR CALCULUS, DIFFERENTIAL EQUATIONS AND TRANSFORMS PHT 110 ENGINEERING PHYSICS B 3-1-0 4  EST 100 ENGINEERING CHEMISTRY 3-1-0 4  EST 100 ENGINEERING MECHANICS 2-1-0 3  EST 110 ENGINEERING GRAPHICS 2-0-2 4  EST 120 BASICS OF CIVIL & MECHANICAL 4-0-0 4  ENGINEERING BASICS OF ELECTRICAL & 4-0-0 4  ENGINEERING CHEMISTRY 2-0-2 4  EST 130 BASICS OF ELECTRICAL & 4-0-0 4  ELECTRONICS ENGINEERING 2-0-2 4  COMMUNICATION 2-0-2 5  PHL 120 ENGINEERING PHYSICS LAB 0-0-2 2  ESL 120 CIVIL & MECHANICAL WORKSHOP 0-0-2 2  ESL 130 ELECTRICAL & ELECTRONICS 0-0-2 2  ESL 130 ELECTRICAL & ELECTRONICS 0-0-2 2  ESL 130 ELECTRICAL & ELECTRONICS 0-0-2 2

NOTE:

Estd.

- 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 B in SI and Engineering Chemistry in S2 & vice versa. Students opting for
  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 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 SI and Engineering Graphics in S2 & vice versa.
- 3. 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.

MANGALAM COLLEGE OF ENGINEERING

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 and Electronics Engineering. Slot for the course is D with CIE marks of 25 each and ESE marks of and Electronics Engineering. Slot for the course is D with CIE marks of 25 each and ESE marks of and Electronics Fig. ME, MECHATRONICS, PE, METTULURGY, 50 each. Students belonging to AERO, AUTO, CE, FSE, IE, ME, MECHATRONICS, PE, METTULURGY, 50 each. Students belonging to AERO, AUTO, CE, FSE, IE, ME, MECHATRONICS, PE, METTULURGY, 50 each. Students belonging to AERO, AUTO, CE, FSE, IE, ME, MECHATRONICS, PE, METTULURGY, 50 each. Students belonging to AERO, AUTO, CE, FSE, IE, ME, MECHATRONICS, PE, METTULURGY, 50 each. Students belonging to AERO, AUTO, CE, FSE, IE, ME, MECHATRONICS, PE, METTULURGY, 50 each. Students belonging to AERO, AUTO, CE, FSE, IE, ME, MECHATRONICS, PE, METTULURGY, 50 each. Students belonging to AERO, AUTO, CE, FSE, IE, ME, MECHATRONICS, PE, METTULURGY, 50 each. Students belonging to AERO, AUTO, CE, FSE, IE, ME, MECHATRONICS, PE, METTULURGY, 50 each. Students belonging to AERO, AUTO, CE, FSE, IE, ME, MECHATRONICS, PE, METTULURGY, 50 each. Students belonging to AERO, AUTO, CE, FSE, IE, ME, MECHATRONICS, PE, METTULURGY, 50 each. Students belonging to AERO, AUTO, CE, FSE, IE, ME, MECHATRONICS, PE, METTULURGY, 50 each. Students belonging to AERO, AUTO, CE, FSE, IE, ME, MECHATRONICS, PE, METTULURGY, 50 each. Students belonging to AERO, AUTO, CE, FSE, IE, ME, MECHATRONICS, PE, METTULURGY, 50 each. Students belonging to AERO, AUTO, CE, FSE, IE, ME, MECHATRONICS, PE, METTULURGY, 50 each. Students belonging to AERO, AUTO, CE, FSE, IE, ME, MECHATRONICS, PE, METTULURGY, 50 each. Students belonging to AERO, AUTO, CE, FSE, IE, ME, MECHATRONICS, PE, METTULURGY, 50 each. Students belonging to AERO, AUTO, CE, FSE, IE, ME, MECHATRONICS, PE, METTULURGY, 50 each. Students belonging to AERO, AUTO, EACH. Students belonging to A

4. 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.

5. 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.



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#### SEMESTER III

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
Α	MAT201	PARTIAL DIFFERENTIAL EQUATION AND COMPLEX ANALYSIS	3-1-0	4	4
В	CET201	MECHANICS OF SOLIDS	3-1-0	4	4
С	CET203	FLUID MECHANICS& HYDRAULICS	3-1-0	Δ4	4
D	CET205	SURVEYING & GEOMATICS	4-0-0	4	4
E	EST200	DESIGN & ENGINEERING	2-0-0	2	2
1/2	нит200	PROFESSIONAL ETHICS	2-0-0	2	2
F	MCN201	SUSTAINABLE ENGINEERING	2-0-0	2	
S	CEL201	CIVIL ENGINEERING PLANNING &DRAFTING LAB	0-0-3	3	2
т	CEL203	SURVEÝ LAB	0-0-3	3	2
R/M	VAC	Remedial/Minor course	3-1-0	4 *	4
		TOTAL		26/30	22/2

#### NOTE:

- Design & Engineering and Professional Ethics shall be offered in both S3 and S4. Institutions can advise students belonging to about 50% of the number of branches in the Institution to opt for Design & Engineering in S3 and Professional Ethics in S4 & vice versa.
- \*All Institutions shall keep 4 hours exclusively for Remedial class/Minor course (Thursdays from 3 to 5 PM and Fridays from 2 to 4 PM). If a student does not opt for minor programme, he/she can be given remedial class.

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#### SEMESTER IV

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDI
Α	MAT202	PROBABILITY, STATISTICS AND NUMERICAL METHODS	3-1-0	4	4
В	EE[202	ENGINEERING GEOLOGY	3-1-1	14	4
С	CET204	GEOTECHNICAL ENGINEERING (	4-0-0	AI	4
D	CET206	TRANSPORTATION ENGINEERING	4-0-0	4	4
Ε	EST200	DESIGN & ENGINEERING	2-0-0	2	2
1/2	HUT200	PROFESSIONAL ETHICS	2-0-0	2	2
F	MCN202 o	CONSTITUTION OF INDIA	2-0-0	2	
S	CEL202	MATERIAL TESTING LAB-1	0-0-3	3	2
Т	CEL204	FLUID MECHANICS LAB	0-0-3	3	2
R/M/H	VAC	Remedial/Minor/Honours course	3-1-0	4*	4
		TOTAL		26/30	22/26

#### NOTE:

- Design & Engineering and Professional Ethics shall be offered in both S3 and S4. Institutions can advise students belonging to about 50% of the number of branches in the Institution to opt for Design & Engineering in S3 and Professional Ethics in S4 & vice versa.
- \*All Institutions should keep 4 hours exclusively for Remedial class/Minor course (Thursdays from 3 to 5 PM and Fridays from 2 to 4 PM). If a student does not opt for minor programme, he/she can be given remedial class.

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### CIVIL ENGINEERING

### SEMESTER V

	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
		STRUCTURAL ANALYSIS – I	3-1-0	4	4
A	CET301	A COMMON OF THE PARTY OF THE PA	T. A	h .i	4
В	ch1303)	DESIGN OF CONCRETE STRUCTURES	3-1-0	M	
С	CET305	GEOTECHNICAL ENGINEERING + IT	4-0-0	41	4
D	CET307	HYDROLOGY & WATER RESOURCES	4-0-0	4	4
E	CET309	CONSTRUCTION TECHNOLOGY 4	3-0-0	3	3
F	MCN301	DISASTER MANAGEMENT	2-0-0	2	-
S	CEL331	MATERIAL TESTING LAB - II	0-0-3	3	2
Т	CEL333	GEOTECHNICAL ENGINEERING LAB	0-0-3	3	2
R/M/H	VAC	Remedial/Minor/Honours course	3-1-0	4*	4
		TOTAL		27/31	23/2

#### NOTE:

1. \*All Institutions should keep 4 hours exclusively for Remedial class/Minor/Honours course (Tuesdays from 3 to 5 PM and Wednesdays from 3 to 5 PM). If a student does not opt for minor/honours programme, he/she can be given remedial class.



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#### SEMESTER VI

CLOT	COURSE NO.	COURSES	L-T-P	нои	RS CREE
SLOT	CET302	STRUCTURAL ANALYSIS – II	3-1-0	4	4
	Esterni Professional State	ENVIRONMENTAL ENGINEERING	4-0-0	/ /4	4
В 	CET304 CET306	DESIGN OF HYDRAULIC STRUCTURES	4-0-0	4	4
D	CETXXX	PROGRAM ELECTIVE I	3-0-0	3	3
E	нитзоо	INDUSTRIAL ECONOMICS & FOREIGN TRADE	3-0-0	3	3
F	CET308	COMREHENSIVE COURSE WORK	1-0-0	1	1
s	CEL332	TRANSPORTATION ENGINEERING LAB	0-0-3	3	2
Т	CEL334	CIVIL ENGINEERING SOFTWARE LAB	0-0-3	3	2
/м/н	VAC	Remedial/Minor/Honours course	3-1-0	4*	4
		TOTAL		25/29	23/27

### PROGRAM ELECTIVE I

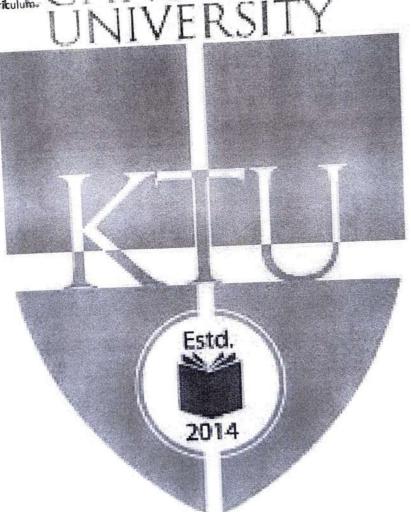
				SAME AND ADDRESS OF THE PARTY O	
SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
	CET312	ADVANCED COMPUTATIONAL METHODS	3-0-0		
	CET322	GEOTECHNICAL INVESTIGATION	3-0-0	3	3
	CET332	TRAFFIC ENGINEERING & MANAGEMENT	3-0-0		
	CET342	MECHANICS OF PLUID FLOW	3-0-0		
	FT352	ADVANCED CONCRETE TECHNOLOGY	3-0-0	1	1
F	ET362	ENVIRONMENTAL IMPACT ASSESSMENT	3-0-0		
C	ET372	FUNCTIONAL DESIGN OF BUILDINGS	3-0-0		

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#### NOTE:

 \*\*All Institutions should keep 4 hours exclusively for Remedial class/Minor/Honours course (Tuesdays from 2 to 4 PM and Wednesdays from 2 to 4 PM). If a student does not opt for minor/honors programme, he/she can be given remedial class.

2. Comprehensive Course Work: The comprehensive course work in the sixth semester of study shall have a written test of 50 marks. The written examination will be of objective type similar to the GATE examination and will be conducted online by the University. Syllabus for comprehensive examination shall be prepared by the respective BoS choosing any 5 core courses studied from examination shall be prepared by the respective BoS choosing any 5 core courses studied from semester 3 to 5. The pass minimum for this course is 25. The course should be mapped with a faculty and classes shall be arranged for practising questions based on the core courses listed in the curriculum.



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#### SEMESTER VII

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
Α	CET401	DESIGN OF STEEL STRUCTURES	3-0-0	3	3
В	CETXXX	PROGRAM ELECTIVE II	3-0-0 A	1 3,	3
С	CETXXX	OPEN ELECTIVE	3-0-0	181	3
D	MCN401	NOUSTRIAL SAFETY ENGINEERING	2-1-0	4	
S	CEL411	ENVIRONMENTAL ENGGLAB	0-0-3	3	2
Т	CEQ413	SEMINAR	0-0-3	3	2
U	CED415	PROJECT PHASE I	0-0-6	6	2
R/M/H	VAC	Remedial/Minor/Honours course	3-1-0	4*	4
		TOTAL		24/28	15/19

#### PROGRAM ELECTIVE II

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
	CET413	PRESTRESSED CONCRETE	3-0-0		GILED!!
	CET423	GROUND IMPROVEMENT TECHNIQUES	3-0-0		
	CET433	HIGHWAY MATERIALS AND DESIGN	3-0-0		
	CET443	APPLIED HYDROLOGY	3-0-0		
В	CET453	CONSTRUCTION PLANNING & MANAGEMENT	3-0-0	3	3
ь	CET463	ADVANCED ENVIRONMENTAL ENGINEERING	3-0-0		
	CET473	OPTIMISATION TECHNIQUES IN CIVIL ENGINEERING	3-0-0		

#### **OPEN ELECTIVE**

The open elective is offered in semester 7. Each program should specify the courses (maximum 5) they would like to offer as electives for other programs. The courses listed below are offered by the Department of CIVIL ENGINEERING for students of other undergraduate branches offered in the college.

SLOT	COURSE NO.	COURSES	L-T-P	HOUR S	CREDIT
С	CET415	ENVIRONMENTAL IMPACT ASSESSMENT	2-1-0		
	CET425 CET485	INFORMATICS FOR INFRASTRUCTURE MANAGEMENT	2-1-0	A <sub>3</sub> A A	3
	CET445 CET455	NATURAL DISASTERS AND MITIGATION ENVIRONMENTAL HEALTH AND SAFETY	2-1-0		
	CET465	GEOINFORMATICS	2-1-0		

#### NOTE:

- 1. \*All Institutions should keep 4 hours exclusively for Remedial class/Minor/Honors course (Mondays from 10 to 12 and Wednesdays from 10 to 12 Noon). If a student does not opt for • minor/honours programme, he/she can be given remedial class.
- 2. Seminar: To encourage and motivate the students to read and collect recent and reliable information from their area of interest confined to the relevant discipline from technical publications including peer reviewed journals, conference, books, project reports etc., prepare a report based on a central theme and present it before a peer audience. Each student shall present the seminar for about 20 minutes duration on the selected topic. The report and the presentation shall be evaluated by a team of internal members comprising three senior faculty members based on style of presentation, technical content, adequacy of references, depth of knowledge and overall quality of the report.

Total marks: 100, only CIE, minimum required to pass 50 10 Attendance Estd. Guide

Technical Content of the Report 40 Presentation

- 3. Project Phase I: A Project topic must be selected either from research literature or the students themselves may propose suitable topics in consultation with their guides. The object of Project Work I is to enable the student to take up investigative study in the broad field of Civil Engineering, either fully theoretical/practical or involving both theoretical and practical work to be assigned by the Department on a group of three/four students, under the guidance of a Supervisor. This is expected to provide a good initiation for the student(s) in R&D work. The assignment to normally include:
  - Survey and study of published literature on the assigned topic;
  - Preparing an Action Plan for conducting the investigation, including team work;
  - Working out a preliminary Approach to the Problem relating to the assigned topic;
  - Block level design documentation
  - Conducting preliminary Analysis/ Modelling/ Simulation/ Experiment/ Design/ Feasibility;
  - Preparing a Written Report on the Study conducted for presentation to the Department;
  - Final Seminar, as oral Presentation before the evaluation committee.

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### CIVIL ENGINEERING

Total marks: 100, only CIE, minimum required to pass 50

: 30

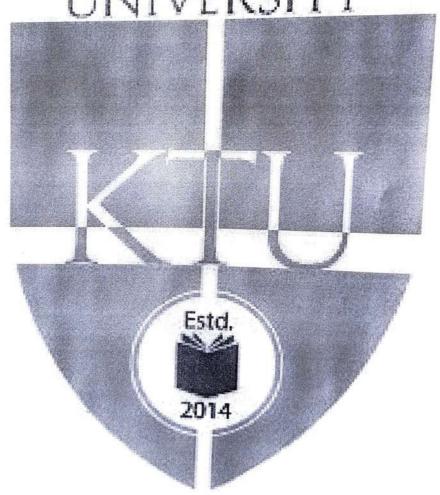
Guide Interim evaluation by the evaluation committee : 20

: 30

Final Seminar

: 20

The evaluation committee comprises HoD or a senior faculty member, Project coordinator and project



### CIVIL ENGINEERING

### SEMESTER VIII

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
Α	CET402	QUANTITY SURVEYING & VALUATION	3-0-0	3	3
В	CETXXX	PROGRAM ELECTIVE III	3-0-0	A3/	3
С	CETXXX	PROGRAM ELECTIVE IV	3-0-0-	AT	3
D	CETXXX	PROGRAM ÉLECTIVE V	3-0-0	14	3
E	CET404	COMPREHENSIVE VIVA VOCE	1-0-0	1	1
U	CED416	PROJECT PHASE II	0-0-12	12	4
R/M/H	VAC	Remedial/Minor/Honours course	3-1-0	4*	4
		TOTAL		25/29	17/21

### PROGRAM ELECTIVE III

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
	CET414	ADVANCED STRUCTURAL DESIGN	3-0-0		
	CET424	GEOENVIRONMENTAL ENGINEERING	3-0-0		
	CET434	RAILWAY AND TUNNEL ENGINEERING	3-0-0		
	CET444	IRRIGATION & DRAINAGE ENGINEERING	3-0-0		_
В	CET <b>45</b> 4	CONSTRUCTION METHODS & EQUIPMENT	3-0-0	3	3
	CET464	AIRQUALITY MANAGEMENT	3-0-0	p <sup>F</sup>	
	CET474	URBAN PLANNING & ARCHITECTURE	3-0-0	1	

### PROGRAM ELECTIVE IV

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
	CET416	BRIDGE ENGINEERING	3-0-0		3
	CET426	ADVANCED FOUNDATION DESIGN	3-0-0		
	CET436	TRANSPORTATION PLANNING	3-0-0		
	CET446	INFORMATICS FOR INFRASTRUCTURE MANAGEMENT	3-0-0		
С	CET456	REPAIR AND REHABILITATION OF BUILDINGS	3-0-0	3	
	CET466	ENVIRONMENTAL REMOTESENSING	3-0-0		
	CET476	BULDING SERVICES	3-0-0		

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### PROGRAM ELECTIVE V

CLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
SLOT	COURSE NO.	200 Table 200 Carlot Ca	3-0-0		
	CET418	EARTHQUAKERESISTANT DESIGN	3-0-0	The second secon	
	CET428	SOIL STRUCTURE INTERACTION			
	CET438	AIRPORT, SEAPORT AND HARBOUR ENGINEERING	3-0-0	M	3
	CET448	HYDROCLIMATOLOGY	2.79	AT	3
D	CET458	SUSTAINABLE CONSTRUCTION	3-0-0	4	
	CET468	CLIMATE CHANGE & SUSTAINABILITY	3-0-0	1. 1.	
	CET478	BUILDING INFORMATION MODELLING	3-0-0		

#### NOTE

- \*All Institutions should keep 4 hours exclusively for Remedial class/Minor/Honours course (Mondays from 10 to 12 and Wednesdays from 10 to 12). If a student does not opt for minor/honors programme, he/she can be given remedial class.
- 2. Comprehensive Course Viva: The comprehensive course viva in the eighth semester of study shall have a viva voce for 50 marks. The viva voce shall be conducted based on the syllabus mentioned for comprehensive course work in the sixth semester. The viva voce will be conducted by the same three member committee assigned for final project phase II evaluation towards the end of the semester. The pass minimum for this course is 25. The course should be mapped with a faculty and classes shall be arranged for practising questions based on the core courses listed in the curriculum. The mark will be treated as internal and should be uploaded along with internal marks of other courses.
- 3. Project Phase II: The object of Project Work II & Dissertation is to enable the student to extend further the investigative study taken up in Project 1, either fully theoretical/practical or involving both theoretical and practical work, under the guidance of a Supervisor from the Department alone or jointly with a Supervisor drawn from R&D laboratory/Industry. This is expected to provide a good training for the student(s) in R&D work and technical leadership. The assignment to normally include:
  - > In depth study of the topic assigned in the light of the Report prepared under Phasel;
  - > Review and finalization of the Approach to the Problem relating to the assigned topic;
  - Detailed Analysis/ Modelling/ Simulation/ Design/ Problem Solving/ Experiment as needed;
  - > Final development of product/process, testing, results, conclusions and future directions;
  - Preparing a paper for Conference presentation/Publication in Journals, if possible:
  - > Preparing a Dissertation in the standard format for being evaluated by the Department;
  - Final Presentation before a Committee

Total marks: 150, only CIE, minimum required to pass 75

Guide : 30
Interim evaluation, 2 times in the semester by the evaluation committee : 50
Quality of the report evaluated by the above committee : 30
Final evaluation by a three member committee : 40

Final evaluation by a three member committee : 40
(The final evaluation committee comprises Project coordinator, expert from Industry/resease)

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and a senior faculty from a sister department. The same committee will conduct comprehensive course viva for 50 marks).

### MINOR

Minor is an additional credential a student may earn if s/he does 20 credits worth of additional learning in a discipline other than her/his major discipline of B.Tech. degree. The objective is to permit a student to customize their Engineering degree to suit their specific interests. Upon completion of an Engineering Minor, a student will be better equipped to perform interdisciplinary research and will be better employable. Engineering Minors allow a student to gain interdisciplinary experience and exposure to concepts and perspectives that may not be a part of their major degree programs.

The academic units offering minors in their discipline will prescribe the set of courses and/or other activities like projects necessary for earning a minor in that discipline. A specialist basket of 3-6 courses is identified for each Minor. Each basket may rest on one or more foundation courses. A basket may have sequences within it, i.e., advanced courses may rest on basic courses in the basket. S/he accumulates credits by registering for the required courses, and if the requirements for a particular minor are met within the time limit for the course, the minor will be awarded. This will be mentioned in the Degree Certificate as "Bachelor of Technology in xxx with Minor in yyy". The fact will also be reflected in the consolidated grade card, along with the list of courses taken. If one specified course cannot be earned during the course of the programme, that minor will not be awarded. The individual course credits earned, however, will be reflected in the consolidated grade card.

- (i) The curriculum/syllabus committee/BoS shall prepare syllabus for courses to be included in the curriculum from third to eight semesters for all branches. The minor courses shall be identified by M slot
- (ii) Registration is permitted for Minor at the beginning of third semester. Total credits required is 182 (162 + 20 credits from value added courses)
- (iii) Out of the 20 Credits, 12 credits shall be earned by undergoing a minimum of three courses listed in the curriculum for minor, of which one course shall be a mini project based on the chosen area. They can do miniproject either in S7 or in S8. The remaining 8 credits could be acquired by undergoing 2 MOOCs recommended by the Board of studies and approved by the Academic Council or through courses listed in the curriculum. The classes for Minor shall be conducted along with regular classes and no extra time shall be required for conducting the courses.
- (iv) There won't be any supplementary examination for the courses chosen for Minor.
- (v) On completion of the program, "Bachelor of Technology in xxx with Minor in yyy" will be awarded.
- (vi) The registration for minor program will commence from semester 3 and the all academic units offering minors in their discipline should prescribe set of such courses. The courses shall be grouped into maximum of 3 baskets. The basket of courses may have sequences within it, i.e., advanced courses may rest on basic courses in the basket. Reshuffling of courses between various baskets will not be allowed. In any case, they should carry out a mini project based on the chosen area in S7 or S8. Students who have registered for B.Tech Minor in CIVIL ENGINEERING Branch can opt to study the courses listed below:

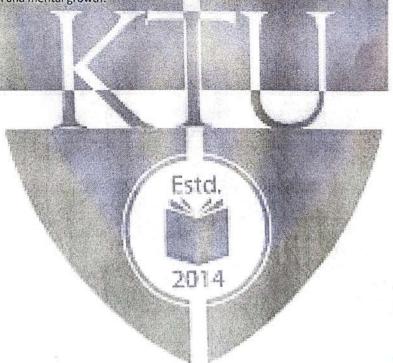
MANGALAM COLLEGE OF ENGINEERING

#### INDUCTION PROGRAM

There will be three weeks induction program for first semester students. It is a unique three-week immersion Foundation Programme designed especially for the fresher's which includes a wide range of activities right from workshops, lectures and seminars to sports tournaments, social work and much more. The programme is designed to mould students into well-rounded individuals, aware and sensitized to local and global conditions and foster their creativity, inculcate values and ethics, and help students to discover their passion. Foundation Programme also serves as a platform for the fresher's to interact with their batchmates and seniors and start working as a team with them. The program is structured around the following five themes:

The programme is designed keeping in mind the following objectives:

- Values and Ethics: Focus on fostering a strong sense of ethical judgment and moral fortitude.
- Creativity: Provide channels to exhibit and develop individual creativity by expressing themselves through art, craft, music, singing, media, dramatics, and other creative activities.
- Leadership, Communication and Teamwork: Develop a culture of teamwork and group communication.
- Social Awareness: Nurture a deeper understanding of the local and global world and our place in at as concerned citizens of the world.
- Physical Activities & Sports: Engage students in sports and physical activity to ensure healthy
  physical and mental growth.



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### Computer Science and Engineering

### CURRICULUM FROM SEMESTERS I TO VIII

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

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Sl. No	APLAB Gategory LKAL	Code	Credits
1	Humanities and Social Sciences including Management courses	HMC	_ 5
2	Basic Science courses	BSC	26
3	Engineering Science Courses	ESC	22
4	Program Core Courses	PCC	79
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 five lecture-based courses and two laboratory and/or drawing/seminar/project courses in the curriculum. Semester-wise credit distribution shall be as below:

The Control of the Co	SERVICE BUILDINGS OF THE PARTY OF THE	ALC: NO PERSONS		7385.7	No commence of the same	Name and Address of the Party o	COLUMN TO STATE OF THE STATE OF	
Sem Villa	1 /2	3	4	5	6	7	8	Total
Credits	17 21	22	22	23	231	15	17	160
Activity Points	SALIN S	50 Tr	NIA	1		50		
Credits for Activity	" Think		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	2	T P			2
G.Total					Age			162

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

**Engineering Science Courses:** Engineering Graphics, Programming in C, Basics of Electrical and Electronics Engineering, Basics of Civil and Mechanical Engineering,

MANGALAM COLYEGE OF ENGINEERING

## COMPUTER SCIENCE AND ENGINEERING

### SEMESTER I

MESIE				HOURS	CREDIT
SLOT	COURSE NO.	COURSES	L-T-P		
A #	MAT 101	LINEAR ALGEBRA AND CALCULUS		A 1.	4
B 1/2	PHT 100	ENGINEERING PHYSICS A	3-1-0 3-1-0	44	4
C	EST 100	ENGINEERING MECHANICS	2-1-0	3	3
1/2	EST 110	ENGINEERING GRAPHICS	2-0-2	4	3
D	EST 120	BASICS OF CIVIL & MECHANICAL ENGINEERING	4-0-0	4	4
1/2	EST 130	BASICS OF ELECTRICAL & ELECTRONICS ENGINEERING	4-0-0	4	4
Е	HUN 101	LIFE SKILLS	2-0-2	.4	
S	PHL 120	ENGINEERING PHYSICS LAB	0-0-2	2	1
1/2	CYL 120	ENGINEERING CHEMISTRY	0-0-2	2	1
T 1/2	ESL 120	CIVIL & MECHANICAL WORKSHOP F51d.	0-0-2	2	1
	ESL 130	ELECTRICAL & ELECTRONICS WORKSHOP	0-0-2	2	1
		TOTAL		23/24	17

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### 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 A	Course Prefix	SL NO	Department	Course Prefix
1	Aeronautical Engg	, AO,	20	Food Technology	FT
2	Applied Electronics & Instrumentation	I AE L	21	Humanities I	HU
3	Artificial Intelligence	AI	22	Industrial Engg	IE
4	Artificial Intelligence & Data Science	AD	23	Information Technology	IT
5	Automobile	AU	24	Instrumentation & Control	IC
6	Biomedical Engg	BM	25	Mandatory Courses	МС
7	Biotechnology	вт	26	Mathematics	MA
8	Chemical Engg	СН	27	Mechanical Engg	ME
9	Chemistry	CY	28	Mechatronics	MR
10	Civil Engg	CE -	29	Metallurgy	MT
11	Computer Science	CS	30	Mechanical (Auto)	MU
12	Computer Science (Artificial Intelligence)	CAE	std!	Mechanical (Prod)	MP
13	Computer Science (Artificial Intelligence & Machine	СМ	32	Naval & Ship Building	SB
14	Learning) Computer Science (Data Science)	CD	33	Physics	PH
15	Computer Science Cyber Security	CC	34	Polymer Engg	PE
16	Electronics & Biomedical	ЕВ	35	Production Engg	RA
17	Electronics & Communication	EC	36	Robotics and Automation	FS
18	Electrical and Computer Engineering	EO	37	Safety & Fire Engg	10
19	Electrical & Electronics	EE			



### SEMESTER I

	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,					
	SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
	A ii	MAT 101	LINEAR ALGEBRA AND	3-1-0	4	4
	В 4	PHT 100	ENGINEERING PHYSICS A	3-1-0	4 day	4
ŀ	1/2	CYT 100 EST 100	ENGINEERING CHEMISTRY ENGINEERING MECHANICS	3-1-0 2-1-0	3	3
	C 1/2	EST 110	ENGINEERING GRAPHICS	2-0-2	4	3
	D.	EST 120	BASICS OF CIVIL & MECHANICAL ENGINEERING	4-0-0	4	4
	1/2	EST 130	BASICS OF ELECTRICAL & ELECTRONICS ENGINEERING	4-0-0	4	4
	Е	HUN 101	LIFE SKILLS	2-0-2	* <b>4</b>	
ſ	s		ENGINEERING PHYSICS LAB	0-0-2	2	1
	1/2	market of the second of the second	ENGINEERING CHEMISTRY LAB	0-0-2	2	1
	Т	ESL 120	CIVIL & MECHANICAL WORKSHOP ESTOL	0-0-2	2	1
	1/2	ESL 130	ELECTRICAL & ELECTRONICS WORKSHOP	0-0-2	2	ı
			TOTAL	23	3/24 1	7
		66.0	CHICAGO AND	Control of the San A		

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### SEMESTER II

SLOT	COURSE NO.	A R COURSES	/L-T-P	HOURS	CREDIT
A	MAT (02	VECTOR CALCULUS , DIFFERENTIAL EQUATIONS AND TRANSFORMS	3-1-0	ÇÃ	4
В	PHT 100	ENGINEERING PHYSICS A	3-1-0	<b>1</b> 4	4
1/2	CYT 100	ENGINEERING CHEMISTRY	3-1-0	4	4
С	EST 100	ENGINEERING MECHANICS	2-1-0	3	3
1/2	EST 110	ENGINEERING GRAPHICS	2-0-2	4	3
D	EST 120	BASICS OF CIVIL & MECHANICAL ENGINEERING	4-0-0	4	4
1/2	EST 130	BASICS OF ELECTRICAL & ELECTRONICS ENGINEERING	4-0-0	4	4
Е	HUN 102	PROFESSIONAL COMMUNICATION	2-0-2	4	
F	EST 102	PROGRAMMING IN C	2-1-2	5	4
S	PHL 120	ENGINEERING PAYSICS LAB	0-0-2	2	1
1/2	CYL 120	ENGINEERING CHEMISTRY LAB	0-0-2	2	1
Т	ESL 120	CIVIL & MECHANICAL WORKSHOP	0-0-2	2	1
1/2	ESL 130	ELECTRICAL & ELECTRONICS WORKSHOP	0-0-2	2	1
		TOTAL		28/29	21

MANGALAM COLLEGE OF ENGINEERING

### NOTE:

- 1. Engineering Physics A 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 A in S1 and Engineering Chemistry in S2 & vice versa. Students opting for Engineering Physics A in a semester should attend Physics Lab in the same semester and students opting for Engineering should attend Engineering Chemistry Lab in the same Chemistry in one sent
- 2 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.
- 3. 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, METALLURGY, 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 Electronics Engineering in a semester should attend Electrical & Electronies Workshop in the same semester.

### 4. LIFE SKILLS

Life skills are those competencies that provide the means for an individual to be resourceful and positive while taking on life's vicestinides. 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.

### 5. 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

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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.

## APLABDUL KALAM EMESTER III CHNOLOGICAL

Α	NO.		場をある。		
E # 859	MAT 203	DISCRETE MATHEMATICAL STRUCTURES	3-1-0	4	4
В	CST 201	DATA STRUCTURES	3-1-0	4	4
1 12	CST 203	LOGIC SYSTEM DESIGN	3-1-0	4	4
D .	CST 205	OBJECT ORIENTED PROGRAMMING USING JAVA	3-1-0	4	4
	EST 200	DESIGN & ENGINEERING	2-0-0	2	2
E (1/2)	HUT 200	PROFESSIONAL ETHICS	2-0-0	2	2
F	MCN 201	SUSTAINABLE ENGINEERING	2-0-0	2	
S	CSL 201	DATA STRUCTURES LAB	0-0-3	3	2
Т	CSL 203	OBJECT ORIENTED PROGRAMMING LAB (IN JAVA)	0-0-3	3	2
R/M	VAC	Remedial/Minor course	3-1-0	4	4
		TOTAL		26*	22/26

MANGALAM COLLEGE OF ENGINEERING
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SEMESTI	ER IV		L-T-P	HOURS	CREDIT
SLOT	COURSE	COURSES	L-1-i	***	
SLOT	NO.	THEORY	3-1-0	4	4
A	MAT 206	1 1 1 1 E E	T.	AM	1
В "	CST 202	COMPUTER ORGANIZATION AND ARCHITECTURE	-3-1-0 T	Ä	4
		DATABASE MANAGEMENT	3-1-0	4	4
С	CST 204	SYSTEMS V	1	1.	100
D	CST 206	OPERATING SYSTEMS	3-1-0	4	4
10	EST 200	DESIGN & ENGINEERING	2-0-0	2	2
E (1/2)	HUT 200	PROFESSIONAL ETHICS	2-0-0	2	2
- 6	は他のではありませんではいません。 1984年 - 1975年 - 1984年 - 1	CONSTITUTION OF INDIA	2-0-0	2	
F	MCN 202	SERVICE CONTRACTOR OF THE SERVICE CONTRACTOR	0-0-3	3	2
S	CSL 202	DIGITAL LAB	TOTAL STREET STREET	3	2
Т	CSL204	OPERATING SYSTEMS LAB	0-0-3	3	2
R/M/ H	VAC	Remedial/Minor/Honors course	3-1-0	4	4
		TOTAL	Design of the second	26*	22/26

### NOTE:

\* Excluding Hours to be engaged for Remedial/Minor/Honors course.

- 1. Design & Engineering and Professional Ethics shall be offered in both S3 and S4. Institutions can advise students belonging to about 50% of the number of branches in the Institution to opt for Design & Engineering in S3 and Professional Ethics in S4 & 2014 vice versa.
- 2 \*All Institutions should keep 4 hours exclusively for Remedial class/Minor course (Thursdays from 3 to 5 PM and Fridays from 2 to 4 PM). If a student does not opt for minor programme, he/she can be given remedial class.

### SEMESTER V

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	CST 301	FORMAL LANGUAGES AND AUTOMATA THEORY	3-1-0	A	A 4
В	CST 303	COMPUTER NETWORKS	-3-1-0	JA.	4
С	CST 305	SYSTEMSOFTWARE	3-1-0	4	4
D	CST 307	MICROPROCESSORS AND MICROCONTROLLERS	3-1-0	4	4
Е	CST 309	MANAGEMENT OF SOFTWARE SYSTEMS	3-0-0	3	3
F	MCN 301	DISASTER MANAGEMENT	2-0-0	2	<del></del>
S	CSL 331	SYSTEM SOFTWARE AND MICROPROCESSORS LAB	0-0-4	4	2
Т	CSL 333	DATABASE MANAGEMENT SYSTEMS LAB	0-0-4	4	2
R/M/ H	VAC	Remedial/Minor/Honors course*	2-0-0	4	4
		TOTAL Fortel		29*	23/27
* Exc	luding Hour	s to be engaged for Remedial/Minor	/Honors	course.	

NOTE:

2014

1. \*All Institutions should keep 4 hours exclusively for Remedial class/Minor/ Honors course (Tuesdays from 3 to 5 PM and Wednesdays from 3 to 5 PM). If a student does not opt for minor/honors programme, he/she can be given remedial class.

MANGALAM COLLEGE OF ENGINEERING
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SLOT	COURS E NO.	COURSES	L-T	-P	HOURS	CRED
Α	CST 302	COMPILER DESIGN	T 3=1-	Q.	T 4A	4 .44
В	CST 304	COMPUTER GRAPHICS AND IMAGE PROCESSING	3-1-	Q	14	1 4
С	CST 306	ALGORITHM ANA LYSIS AND DESIGN	3-1-0		A	1 L 4
D	CST	PROGRAM ELECTIVE I	2-1-0	1	3 4 5	3
Е	HUT 300	INDUSTRIAL ECONOMICS & FOREIGN TRADE	3-0-0	# 	3	3
F	CST 308	*COMPREHENSIVE COURSE WORK	1-0-0		1	1
S	CSL 332	NETWORKING-LAB	0-0-3		3	
T	CSD 334	MINIPROJECT	0-0-3	Kee .	3	2
R/M/ H	VAC	Remedial/Minor/Honors course*	3-1-0	2	4	4
	Anna Anna Anna Anna Anna Anna Anna Anna	TOTAL		25	*	·
* Exclud	ling Hours to	be engaged for Remedial/Minor/Ho	To the same of	25	* 2.	3/27

### Estd.

Note:

ve trending

Computing,

Electives: This curriculum envisages to offer a learner an opportunity to earn proficiency in one of the five trending areas in Computer Science, namely Machine Learning, Data Science, Security in Computing, Formal Methods in Software Engineering and Hardware Technologies. Three courses each from the above areas are included through Elective Courses in different Elective Buckets, For example, a learner who is interested in the Machine Learning area may opt to take the elective courses - Foundations of Machine Learning from Elective-I in S6, Machine Learning from Elective-II in S7 and Deep Learning from Elective-III in S8. The Department may offer Elective Courses to enable students to utilize this opportunity, depending on the availability of faculty. The courses WANGALAN COLLUND OF LICHTERING included from these areas under various Elective Buckets are shown in the table below.

Bucke			Semester	
t	Specialisation	\$6 Sat Sa	STATE OF STREET	1.75117.58
1	Machine Learning	FOUNDATIONS OF MACHINE LEARNING (E-I)	MACHINE LEARNING (E-II)	DEEP LEARNING (E-III)
2	Data Science	DATA ANALYTIGS	CEOUD COMPUTING (E-I)	BLOCK CHAIR TECHNOLOGIES (E-V)
3	Security in Computing	FOUNDATIONS OF SECURITY IN COMPUTING (E-I)	LSECURITY	CRYPTOGRAPHY (E-III)
4	Formal Methods in Software Engineering	A U TO MATE E VERIFICATION (E-		SOFTWARE TESTING (E-V)

### PROGRAM ELECTIVE I

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
	CST 312	i FOUNDATIONS OF MACHINE LEARNING	2-1-0		
	CST 322	ii DATA ANALYTICS	2-1-0		
	CST 332	iii FOUNDATIONS OF SECURITY IN COMPUTING	2-1-0		
D	CST 342	iv AUTOMATED 14 VERIFICATION 2014	2-1-0	3	3
	CST 362	vi PROGRAMMING IN PYTHON	2-1-0		
	CST 372	vii DATA AND COMPUTER COMMUNICATION	2-1-0		

MANGALAM COLLEGE OF ENGINEERING

	TO BE CONSIDERED F	OR COMPRE	HENSIVE CO	OURSE WORK
DISCRET	E MATHEMATICAL STI	RUCTURES	KA	LAM
··· ODED A	TING SYSTEMS UTER ORGANIZATION A	ND ARCHITE	SCTURE	ÇAL
v DATAB	ASE MANAGEMENT SY	STEMS		Y
vi FORM	AL LANGUAGES AND A	UTOMATA TI	HEURY	

#### NOTE:

- 1. \*All Institutions should keep 4 hours exclusively for Remedial class/Minor/Honors course (Tuesdays from 3 to 5 PM and Wednesdays from 2 to 4 PM). If a student does not opt for minor/honors programme, he/she can be given remedial class.
- 2. Comprehensive Course Work: The comprehensive course work in the sixth semester of study shall have a written test of 50 marks. The written examination will be of objective type similar to the GATE examination and will be conducted by the University. Syllabus for comprehensive examination shall be prepared by the respective BoS choosing the above listed 6 core courses studied from semesters 3 to 5. The pass minimum for this course is 25. The course should be mapped with a faculty and classes shall be arranged for practicing questions based on the core courses listed in the curriculum.
- 3. Mini project: It is introduced in the sixth semester with a specific objective to strengthen the understanding of student's fundamentals through effective application of theoretical concepts. Mini project can help to boost their skills and widen the horizon of their thinking. The ultimate aim of an engineering student is to resolve a problem by applying theoretical knowledge. Doing more projects increases problem-solving skills. Student Groups with 3 or 4 members should identify a topic of interest in consultation with Faculty/Advisor. Review the literature and gather information pertaining to the chosen topic. State the objectives and develop a methodology to achieve the objectives. Carryout the design/fabrication or develop codes/programs to achieve the objectives. Demonstrate the novelty of the project through the results and outputs. The progress of the mini project is evaluated based on a minimum of two reviews. The review committee may be constituted by the Head of the Department. A project report is required at the end of the semester. The product has to be project report is required at the end of the semester.

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### COMPUTER SCIENCE AND ENGINEERING

demonstrated for its full design specifications. Innovative design concepts, reliability considerations, aesthetics/ergonomic aspects taken care of in the project shall be given due weight. The internal evaluation will be made based on the product, the report and a viva-voce examination, conducted internally by a 3 member committee appointed by Head of the Department comprising HoD or a senior faculty member, Mini Project coordinator for that program and project guide.

Total marks: 150 - CIE 75 marks and ESE 75 marks

Split up for QIE

Attendance T

Project Guide

Project Report

10

Evaluation by the Committee (will be evaluating the level of completion and demonstration of functionality/specifications, presentation, oral examination, work knowledge and involvement)

40

### SEMESTER VII

LOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	CST 401	ARTIFICIAL INTELLIGENCE	2-1-0	3	3
В	CST —	PROGRAM ELECTIVE II	2-1-0	3	3
С	CST —	OPEN ELECTIVE	2-1-0	3	3
D	MCN 401	INDUSTRIAL SAFETY ENGINEERING	2-1-0	3	-
S	CSL 411	COMPILER LAB	0-0-3	3	2
Т	CSQ 413	SEMINAR	0-0-3	3	2
U	CSD 415	PROJECT PHASE T	0-0-6	6	2
R/M/ H	VAC	Remedial/Minor/Honors course*	3-1-0	4	4
		TOTAL		24*	15/19

MANGALAN DE ENGINEERING

### PROGRAM ELECTIVE II

$\neg$	COURSE	COURSES	L-T-P	HOURS	CREDIT
SLOT	NO.		2-1-0		
-	CST 413	i MACHINE LEARNING ii CLOUD COMPUTING	2-1-0	.AA	1
.1	CST-433	COMPUTING IN	2-1-0	ÇΑ	Same of the latest and the latest an
В	CST 443	iv MODEL BASED SOFTWARE DEVELOPMENT	2-1-0	3	3
	CST 463	vi WEB PROGRAMMING	2-1-0		
	CST 473	vii NATURAL LANGUAGE PROCESSING	2-1-0		

### OPEN ELECTIVE

The open elective is offered in semester 7. Each program should specify the courses (maximum 5) they would like to offer as electives for other programs. The courses listed below are offered by the Department of **COMPUTER SCIENCE & ENGINEERING** for students of other undergraduate branches except Computer Science & Engineering and Information Technology, offered in the colleges under KTU.

SLOT	COURSE NO.	COURSES.	L-T-P	HOURS	CREDIT
	CST 415	INTRODUCTION TO MOBILE COMPUTING	2-1-0		
	CST 425	ii INTRODUCTION TO DEEP. LEARNING	2-1-0		
В	CST 435	iii COMPUTER GRAPHICS	2-1-0	3	3
	CST 445	iv PYTHON FOR ENGINEERS	2-1-0		
	CST 455	v OBJECT ORIENTED CONCEPTS	2-1-0		

S. C. P. F. P. P. C.

#### NOTE:

- 1. All Institutions should keep 4 hours exclusively for Remedial class/Minor/Honors course (Mondays from 10 to 12 and Wednesdays from 10 to 12 Noon). If a student does not opt for minor/honors programme, he/she can be given remedial class.
- Seminar: To encourage and motivate the students to read and collect recent and reliable information about their area of interest confined to the televant discipline, from technical publications including peer reviewed journals, conferences, books, project reports etc., prepare a report based on a central theme and present it before a peer audience. Each student shall present the seminar for about 20 minutes duration on the selected topic. The report and the presentation shall be evaluated by a team of faculty members comprising Academic coordinator for that program, seminar coordinator and seminar guide based on style of presentation, technical content, adequacy of references, depth of knowledge and overall quality of the report.

Total marks: 100, only CIE, minimum	required to pass 50
Attendance	104
Seminar Guide	20
Technical Content of the Report	30
Presentation	40

- 3. Project Phase-I: A Project topic must be selected either from research literature or the students themselves may propose suitable topics in consultation with their guides. The objective of Project Work Phase-L is to enable the student to take up investigative study in the broad field of Computer Science and Engineering, either fully theoretical/ practical or involving both theoretical and practical work to be assigned by the Department on a group of three/four students, under the mentoring of a Project Guide(s). This is expected to provide a good initiation for the student(s) in R&D work. The assignment shall normally include:
  - Survey and study of published literature on the assigned topic;
  - Preparing an Action Plan for conducting the investigation, including team
  - Working out a preliminary Approach to the Problem relating to the assigned
  - Block level design documentation
  - Conducting preliminary Analysis/ Modelling/ Simulation/ Experiment/ Design/Feasibility;

### COMPUTER SCIENCE AND ENGINEERING

- Preparing a Written Report on the Study conducted for presentation to the Department;
- > Final project presentation before the concerned departmental committee.

Total marks: 100, only CIE, minimum required to pass 50

Project Guide(s)	L
Interim evaluation by the evaluation committee	
Final project presentation	
Final evaluation by the evaluation committee 20	•

The evaluation committee comprises HoD or a senior faculty member, Project coordinator and project guide(s).

### SEMESTER VIII

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	CST 402	DISTRIBUTED COMPUTING	2-1-0	3	
В	CST —	PROGRAM ELECTIVE III	2-1-0	3	3
С	CST —	PROGRAM ELECTIVE IV	2-1-0	3	3
D	CST_	PROGRAM ELECTIVE V	2-1-0	2500	168 0
Т	CST 404	COMPREHENSIVE COURSE VIVA	1-0-0	3 l	3
U	CSD 416	PROJECT PHASE II	0-0-12	12	$\overline{}$
J/M/ H	VAC	Pamodial N	3-1-0	4	4
	Name and Address of the Owner, where	TOTAL  e engaged for Remedial/Minor/Hor		25*	17/21

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### PROGRAM ELECTIVE III

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
	CST 414	i DEEP LEARNING	2-1-0		
	CST 424	ii PROGRAMMING	2-1-0	Ar	1
		PARADIGMS  iii CRYPTOGRAPHY	2-11-0	CA	
1	CST 434	The Independently (	2-1-0	/ 3	3
В	CST 444	V FUZZY SET THEORY AND	2-1-0		
1	CST 45	APPLICATIONS	2-1-0		
1	CST 46	4 vi EMBEDDED SYSTEMS	2-1-0		
1	CST 4	vii COMPUTER VISION			

### PROGRAM ELECTIVE IV

GRAM SLOT	COURSE.	COURSES	L-T-P	HOURS	CREDIT		
SLO .	NO. CST 416	i FORMAL METHODS AND TOOLS IN SOFTWARE ENGINEERING	2-1-0				
С	CST 426	i i CLIENT SERVER ARCHITECTURE	2-1-0				
	CST 436	IN DATA COMPRESSION	2-1-0	3	3		
	CST 466 vi DATA	vi DATA MINING	2-1-	COST			

MANGALAM COLLEGE OF ENGINEERING

### PROGRAM ELECTIVE V

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
8	CST 418 -CST 428	I HIGH PERFORMANCE COMPUTING I L II BLOCK CHAIN	2-1-0	.A.A	1
D	CST 438	TECHNOLOGIES  iii IMAGE PROCESSING  TECHNIQUE	2-1-0	ÇA	L
The same	CST 448	iv INTERNET OF THINGS	2-1-0		3
	CST 458	v SOFTWARE TESTING	2-1-0		
0.00	CST 468	vi BIOINFORMATICS	2-1-0		
	CST 478	vii COMPUTATIONAL LINGUISTICS	2-1-0		

#### NOTE:

- \*All Institutions should keep 4 hours exclusively for Remedial class/Minor/Honors course (Mondays from 10 to 12 and Wednesdays from 10 to 12 PM). If a student does not opt for minor/honors programme, he/she can be given remedial class.
- 2. Comprehensive Viva Voce: The comprehensive viva voce in the eighth semester of study shall have a viva voce for 50 marks. The viva voce shall be conducted based on the core subjects studied from third to eighth semester. The viva voce will be conducted by the same three member committee assigned for final project phase II evaluation towards the end of the semesters. The pass minimum for this course is 25. The course should be mapped with a faculty and classes shall be arranged for practicing questions based on the core courses listed in the curriculum. The mark will be treated as internal and should be uploaded along with internal marks of other courses.
- 3. Project Phase II: The objective of Project Work Phase II & Dissertation is to enable the student to extend further the investigative study taken up in Project Phase I, either fully theoretical/practical or involving both theoretical and practical work, under the mentoring of a Project Guide from the Department alone or jointly with a Supervisor drawn from R&D laboratory/Industry. This is expected to provide a good training for the student(s) in R&D work and technical leadership. The assignment shall normally include:

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### COMPUTER SCIENCE AND ENGINEERING

- In depth study of the topic assigned in the light of the Report prepared in Phase 1;
- > Review and finalization of the Approach to the Problem relating to the assigned topic;
- Detailed Analysis/Modeling/Simulation/Design/Problem Solving/Experiment as needed:
- Final develop
- ion/Publication in Journals, if Preparing a possible;
- rd format for being evaluated by the Preparing a
  - Final Presentation before the concerned evaluation committee

Total marks: 150, only CIE, minimum required to pass 75

Project Guide

Interim evaluation, twice in the semester by the evaluation committee 70

Quality of the report evaluated by the above committee

(The evaluation committee comprises HoD or a senior faculty member, Project coordinator and project guide). 40

Final evaluation by a three member committee

(The final evaluation committee comprises Project coordinator, expert from Industry/ research Institute and a senior faculty from a sister department. The same committee will conduct comprehensive course viva for 50 marks ).

### MINOR

Minor is an additional credential a student may earn if she/he does 20 credits worth of additional learning in a discipline other than her/his major discipline of B.Tech. degree. The objective is to permit a student to customize their Engineering degree to suit their specific objective is to permit their specific interests. Upon completion of an Engineering Minor, a student will be better equipped to perform interdisciplinary research and will be better employable. Engineering Minors allow a student to gain interdisciplinary experience and exposure to concepts and perspectives that may not be a part of their major degree programs.

The academic units offering minors in their discipline will prescribe the set of courses and/or other activities like projects necessary for earning a minor in that discipline. A specialist bucket of 3-6 courses is identified for each Minor. Each bucket may rest on one or more

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foundation courses. A bucket may have sequences within it, i.e., advanced courses may rest on basic courses in the bucket. She/he accumulates credits by registering for the required courses, and if the requirements for a particular minor are met within the time limit for the course, the minor will be awarded. This will be mentioned in the Degree Certificate as "Bachelor of Technology in xxx with Minor in yyy". The fact will also be reflected in the consolidated grade card, along with the list of courses taken. It one specified course cannot be earned during the course of the programme, that minor will not be awarded. The individual course credits earned, however, will be reflected in the consolidated grade card.

- (i) The curriculum/syllabus committee/BoS shall prepare syllabus for courses to be included in the curriculum from third to eight semesters for all branches. The minor courses shall be identified by M slot courses.
- (ii) Registration is permitted for Minor at the beginning of third semester. Total credits required to award B.tech with Minor is 182 (162 + 20)
- (iii) Out of the 20 Credits, 12 credits shall be earned by undergoing a minimum of three courses, of which one course shall be a mini project based on the chosen area. They can do miniproject either in S7 or in S8. The remaining 8 credits could be acquired through 2 MOOCs recommended by the Board of Studies and approved by the Academic Council or 2 courses from the minor buckets listed here. The classes for Minor shall be conducted along with regular classes and no extra time shall be required for conducting the courses.
- (iv) There won't be any supplementary examination for the courses chosen for Minor.
- (v) On completion of the program, "Bachelor of Technology in xxx with Minor in yyy" will be awarded if the registrant earn 20 credits form the minor courses.
- (vi) The registration for minor program will commence from semester 3 and all the academic units offering minors in their discipline should prescribe set of such courses. The courses shall be grouped into maximum of 5 buckets. The bucket of courses may have sequences within it, i.e., advanced courses may rest on basic courses in the bucket. Reshuffling of courses between various buckets will not be allowed. There is option to skip any two courses listed here and to opt for equivalent MOOC courses approved by the Academic Council. In any case, they should carry out a mini project based on the chosen area in S7 or S8. For example: Students who have registered for B.Tech Minor in Computer Science & Engineering can opt to study the courses listed below:

A September 1 Sept

					MINOF	R BUCKETS						٦		
S	BUCKET-1			I	BUCKET-2					BUCKET-3				
E M	S	pecia	lization - Software Engineering		Speci	alization - Machin Learning	e		Speci	alization - Network	ing	1		
E S T E R	CO UR SE NO		OURSE NAME I	C R E D I	CO. URS El NO	Course Name			CQ URS E NQ	GOURSE NAME	H O U R S	C R E D I T		
S3	CS7 281	-	BJECT ORIENTED PROGRAMMING	4 4	CST 283	PYTHON FOR MACHINE LEARNING	4	4	CST 285	DATA COMMUNICAT ION	4	4		
S4	CS 28	2	PROGRAMMING METHODOLOGIE S	4 4	CST 284	MATHEMATIC S FOR MACHINE LEARNING	4	4	CST 286	INTRODUCTIO N TO COMPUTER NETWORKS	4	4		
s	5	ST 81	CONCEPTS IN SOFTWARE ENGINEERING	4 4	CST 383	CONCEPTS IN MACHINE LEARNING	4	4	CST 385	CLIENT SERVER SYSTEMS	4	4		
5		CST 382	INTRODUCTION TO SOFTWARE TESTING	4	CST 384	CONCEPTS IN DEEP LEARNING	4	4	CST 386	WIRELESS NETWORKS AND IOT APPLICATION S	4	4		
+		CSD 481	Miniproject	4	4 CSD 481	Miniproject	4	4	CSD 481	Miniproject	4	4		
ł	S8	CSD 482		4	4 CSD 482	Miniproject	4	4	CSD 482	Williproject	4	. 4		

Note-1: Name of the specialization shall be mentioned in the M Note-2: Any B.Tech students from non-Computer Science/non-IT streams can register for the courses in the minor buckets.

#### HONORS

Honors is an additional credential a student may earn if she/he opts for the extra 20 credits needed for this in her/his own discipline. Honors is not indicative of a class. The University is providing this option for academically extra brilliant students to acquire Honors. Honors is intended for a student to gain expertise/get specialized in an area inside his/her major B.Tech discipline and to enrich knowledge in emerging/advanced areas in the concerned branch of engineering. It is particularly suited for students aiming to pursue higher studies. Upon completion of Honors, a student will be better equipped to perform research in her/his branch of engineering. On successful accumulation of credits at the end of the programme, this will be mentioned in the Degree Certificate as "Bachelor of Technology in xxx, with Honors." The fact will also be reflected in the consolidated grade card, along with the list of courses taken. If a student is not earning credits for any one of the specified course for getting Honors, she/he is not entitled to get Honors. The individual course credits earned, however, will be reflected in the consolidated grade card.

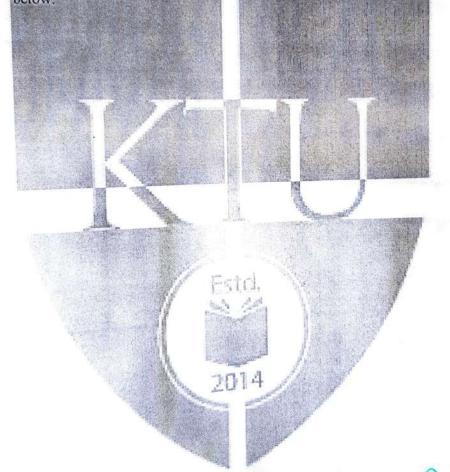
The courses shall be grouped into maximum of 3 buckets, each bucket representing a particular specialization in the branch. The students shall select only the courses from same bucket in all semesters. It means that the specialization is to be fixed by the student and cannot be changed subsequently. The internal evaluation, examination and grading shall be exactly as for other mandatory courses. The Honors courses shall be identified by H slot courses.

- The curriculum/syllabus committee/BoS shall prepare syllabus for courses to be (i) included in the curriculum from fourth to eight semesters for all branches. The Honors courses shall be identified by H slot courses.
- Registration is permitted for Honors at the beginning of fourth semester. Total credits required is 182 (162 + 20)(ii)
- Out of the 20 Credits, 12 credits shall be earned by undergoing a minimum of (iii) three courses, of which one course shall be a mini project based on the chosen area. The remaining 8 credits could be acquired through 2 MOOCs recommended by the Board of studies and approved by the Academic Council or 2 courses from the same bucket as the above 3 courses. The classes for Honors shall be conducted along with regular classes and no extra time shall be required for conducting the courses. The students should earn a grade of "C' or better for all courses under Honors.
- There won't be any supplementary examination for the courses chosen for (iv)
- Technology in xxx, with Honors" will be awarded if overall CGPA is greater than the control of the programme, "Bachelor of the programme, "Bac (v)

or equal to 8.5, earned a grade of 'C' or better for all courses chosen for Honors and there is no history of 'F' Grade in the entire span of the BTech Course.

(vi)

The registration for Honors program will commence from semester 4 and the all academic units offering Honors in their discipline should prescribe set of such courses. The courses shall be grouped into maximum of 5 buckets, each bucket representing a particular specialization in the branch. The students shall select the courses from same bucket in all semesters. It means that the specialization is to be fixed by the student and cannot be changed subsequently. There is option to skip any two courses listed here if required and to opt for equivalent MOOC courses approved by the Academic Council. In any case, they should carry out a mini project based on the chosen area in S8. For example: Students who have registered for B.Tech in Computer Science and Engineering with Honors can opt to study the courses listed in one of the buckets shown below:



MANGALAM COLLEGE OF ENGINEERING Eltumanoor

					HON	ORS BUCKETS						
s		BUCKET-I			BUCKET-2	BUCKET-3						
E M	Spe	cialization - Security	in	76,	Spe T %	ecialization - Mach Learning	ine		, S <sub>I</sub>	pecialization - Form Methods	ıal	
E S T E R	CO URS E NO	COURSE NAME	H O U R	OREDIT	COURS NO NO	Course NAME	HOURS	CREDET	CO UK SE NO	Course MAME	H O U R S	I I I
S4	CST 292	NUMBER THEORY	4	4	CST 294	COMPUTATIONAL FUNDAMENT ALS FOR MACHINE LEARNING	4	4	CST 296	PRINCIPLES OF PROGRAM ANALYSIS AND VERIFICATION	4	4
S5	CST 393	CRYPTOGRAPHI C ALGORITHMS	4	4	CST 395	NEURAL NETWORKS AND DEEP LEARNING	4	4	CST 397	PRINCIPLES OF MODEL CHECKING	4	4
S6	CST 394	NETWORK SECURITY	4	4	CST 396	ADVANCED TOPICS IN MACHINE LEARNING	4	4	CST 398	THEORY OF COMPUTABILI TY AND COMPLEXITY	4	4
S7	CST 495	CYBER FORENSICS	4	4	CST 497	ADVANCED TOPICS IN ARTIFICIAL INTELLIGENC E	4	4	CST 499	LOGIC FOR COMPUTER SCIENCE	4	4
S8	CSD 496	Miniproject	4	4	CSD 496	Miniproject	4	4	CSD 496	Miniproject	4	4

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### INDUCTION PROGRAM

There will be three weeks induction program for first semester students. It is a unique three-week immersion Foundation Programme designed specifically for the fresher's which includes a wide range of activities right from workshops, lectures and seminars to sports tournaments, social works and much more. The programme is designed to mould students into well-rounded individuals, aware and sensitized to local and global conditions and foster their creativity, inculcate values and ethics, and help students to discover their passion. Foundation Programme also serves as a platform for the fresher's to interact with their batchmates and seniors and start working as a team with them. The program is structured around the following five themes:

The programme is designed keeping in mind the following objectives:

- Values and Ethics: Focus on fostering a strong sense of ethical judgment and moral fortitude.
- Creativity: Provide channels to exhibit and develop individual creativity by expressing themselves through art, craft, music, singing, media, dramatics, and other creative activities.
- Leadership, Communication and Teamwork: Develop a culture of teamwork and group communication.
- Social Awareness; Nurture a deeper understanding of the local and global world and our place in at as concerned citizens of the world.
- Physical Activities & Sports: Engage students in sports and physical activity to ensure healthy physical and mental growth.



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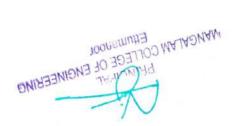
### CURRICULUM I TO VIII: B.Tech ELECTRONICS & COMMUNICATION ENGINEERING

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

01	Value Added Course (Optional)	DΑV	70
	Total Mandatory Credits	91	7
6	Mandatory Student Activities (P/F)	ASM	Z
8	Mandatory Non-credit Courses (P/F) with grade	МИС	
	Project work and Seminar	SMd	от
9	Open Elective Courses	OEC	ε
S	Program Elective Courses	bec.	sī
Þ	Program Core Courses	DDG	94
ε	Engineering Science Courses	EZC	77
Z	Basic Science courses	Bac	97
τ	Humanities and Social Sciences including Management	/SWH	8
.15 No	Category	apoo V	Credit

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

791					d Its	Sta.			lete	oT.bne10
7					Z		W.		lof	Credits Activity
	18.1	.0	S	1	# 5000 # 5000 # 5000		05	L.		Activity Points
09τ	Δī	Sī	52	52	77	77	17	-21		Credits
letoT	8	L	9	S	<b>-</b> b	ε	7	T Johngursip 11pa		Semeste



Basic Science Courses: Maths, Physics, Chemistry, Biology for Engineers, Life Science etc Engineering science courses: Basic Electrical, Engineering Graphics, Programming, Workshop, Engineering science courses: Basic Electrical, Engineering Mechanics, Mechanical Engineering, Thermodynamics, Basic Electronics, Basic Civil, Engineering Mechanics, Design Engineering, Materials Engineering etc.

Humanities and Social Sciences including Management courses: English, Humanities, Professional Finance & Accounting, Life skills, Professional Communication, Economics Ethics, Management,

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

Course Code and Course N

Each course is denoted by a unique code consisting of three alphabets followed by three numerals like E C L 2 0 1. 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 following table.

Code	Description
	Theory based courses (other the lecture hours, these courses can have tutorial
T	Theory based courses (other the lecture mount) 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.

ENGINEERING

### 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 A	Course_ Prefix	SL.	Department 1	Course Prefix
1	Aeronautical Engg	, Ao -	20	Food Technology	FT
2	Applied Electronics & Instrumentation	INET	21	Humanities	HU
3	Artificial Intelligence	Al	22	Industrial Engg	IE
4	Artificial Intelligence & Data Science	AD	23	Information Technology	IT
<b>•</b> 5	Automobile	AU	24	Instrumentation & Control	IC
6	Biomedical Engg	ВМ	25	Mandatory Courses	MC
7	Biotechnology	ВТ	26	Mathematics	MA
8	Chemical Engg	СН	27	Mechanical Engg	ME
9	Chemistry	CY	28	Mechatronics	MR
10	Civil Engg	CE .	29	Metallurgy	MT
11	Computer Science	CS	30	Mechanical (Auto)	MU
12	Computer Science (Artificial Intelligence)	CA ES	tđ!	Mechanical (Prod)	MP
13	Computer Science (Artificial Intelligence & Machine Learning)	СМ	32	Naval & Ship Building	SB
14	Computer Science (Data Science)	CD CD	33	Physics	PH
15	Computer Science Cyber Security	cc 2f	34	Polymer Engg	PO
16	Electronics & Biomedical	ЕВ	35	Production Engg	PE
17	Electronics & Communication	EC.	36	Robotics and Automation	RA
18	Electrical and Computer Engineering	ЕО	37	Safety & Fire Engg	FS
19	Electrical & Electronics	EE			

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MESTE	RI		L-T-P	HOURS	CREDIT
SLOT	COURSE NO.	COURSES	3-1-0	4	4
Α	MAT 101	LINEAR ALGEBRA AND CALCULUS	3-1-0	1/4/1	4
B 1/2	ур <b>н</b> т 100	ENGINEERING PHYSICS A	3-1-0	4	4
1,1	CYT 100	ENGINEERING CHEMISTRY	2-1-0	3	3
C 1/2	EST 100	ENGINEERING MECHANICS	2-0-2	4	3
	EST 110	ENGINEERING GRAPHICS  BASICS OF CIVIL & MECHANICAL	4-0-0	4	4
D 1/2	EST 120	ENGINEERING  BASICS OF ELECTRICAL &	4-0-0	4	4
E	HUN 101	ELECTRONICS ENGINEERING LIFE SKILLS	2-0-2	4	
5	PHL 120	ENGINEERING PHYSICS LAB	0-0-2	2	1
1/2	CYL 120	ENGINEERING CHEMISTRY LAB	0-0-2	2	1
T 1/2	ESL 120	CIVIL & MECHANICAL WORKSHOP	0-0-2	2	1
1/2	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

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### SEMESTER II

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
Α	MAT 102	VECTOR CALCULUS, DIFFERENTIAL	3-1-0	4	4
. В	PHT 100	EQUATIONS AND TRANSFORMS FIRE	3-1-0	M	4
1/2	CYT 100	ENGINEERING CHEMISTRY	3-1-0	4	4
C 1/2	EST 100	ENGINEERING MECHANICS	2-1-0	3	3
1/2	EST 110	ENGINEERING GRAPHICS	2-0-2	4	3
D 1/2	EST 120	BASICS OF CIVIL & MECHANICAL ENGINEERING	4-0-0	4	4
	EST 130	BASICS OF ELECTRICAL & ELECTRONICS ENGINEERING	4-0-0	4	4
E	HUN 102	PROFESSIONAL COMMUNICATION	2-0-2	4	
F	EST 102	PROGRAMMING IN C	2-1-2	5	4
S 1/2	PHL 120	ENGINEERING PHYSICS LAB	0-0-2	2	1
1,2	CYL 120	ENGINEERING CHEMISTRY LAB	0-0-2	2	1
T 1/2	ESL 120	CIVIL & MECHANICAL WORKSHOP	0-0-2	2	1
	ESL 130	ELECTRICAL & ELECTRONICS WORKSHOP FSTC	0-0-2	2	1
	7	TOTAL		28/29	21

#### NOTE:

- Engineering Physics A 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 A in SI and Engineering Chemistry in S2 & vice versa. Students opting for
  Engineering Physics A 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 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 SI and Engineering Graphics in S2 & vice versa.
- 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

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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,

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 & Electrodics Workshop in the same semester

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.

### 5. 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.

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#### Semester III

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	MAT201	PARTIAL DIFFERENTIAL EQUATION AND COMPLEX	3-1-0	4	4
В	√ECT 201	ANALYSIS  SOLID STATE DEVICES	3-1-0	A4L	AA
С	ECT 203	LOGIC-CIRCUIT DESIGN	3-1-0	]4(	4
D	ECT 205	NETWORK THEORY	8-1-0	44	4
E 1/2	EST200	DESIGN AND ENGINEERING	2-0-0	2	2
	HUT200	PROFESSIONAL ETHICS	2-0-0	2	2
F	MCN201	SUSTAINABLE ENGINEERING	2-0-0	2	
S	ECL 201	SCIENTIFIC COMPUTING LAB	0-0-3	3	2
Т	ECL 203	LOGIC DESIGN LAB	0-0-3	3.	2
R/M	VAC	Remedial/Minor course	3-1-0	4**	4
		TOTA	LL III	26/30	22/26

#### NOTE:

TE:

1. Design & Engineering and Professional Ethics shall be offered in both S3 and S4.

Institutions can advise students belonging to about 50% of the number of branches in the Institution to opt for Design & Engineering in S3 and Professional Ethics in S4 & vice versa.

2. \*All Institutions shall keep 4 hours exclusively for Remedial class/Minor course (Thursdays from 3 to 5 PM and Fridays from 2 to 4 PM). If a student does not opt for minor programme, he/she can be given remedial class.

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## Semester IV

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
Α	MAT 204	PROBABILITY, RANDOM PROCESS AND NUMERICAL METHODS	3-1-0	4	4
В	EGT 202)	ANALOG CIRCUITS	3-1-0	A 4	A 4
С	=E€∓ 204	SIGNALS AND SYSTEMS	3-1-0	4	- 44
D	ECT 206	COMPUTER ARCHITECTURE AND MICROCONTROLLERS	3-1-0	1 4	4
E	EST200	DESIGN AND THE	No.		
1/2	<b>是在</b> 国际大学	DESIGN AND ENGINEERING	2-0-0	2 1	2
	HUT200	PROFESSIONAL ETHICS	2-0-0	2	2
F	MCN202	CONSTITUTION OF INDIA	2-0-0	2	
S	ECL 202	ANALOG CIRCUITS AND SIMULATION LAB	0-0-3	3	2
T	ECL 204	MICROCONTROLLER LAB	0-0-3	3	
R/M/H	VAC	Remedial/Minor/Honours course	3-1-0		2
		TOTAL		26/30	
				20/30	22/26

### NOTE:

- Design & Engineering and Professional Ethics shall be offered in both S3 and S4.
   Institutions can advise students belonging to about 50% of the number of branches in the Institution to opt for Design & Engineering in S3 and Professional Ethics in S4 & vice versa.
- \*All Institutions should keep 4 hours exclusively for Remedial class/Minor course (Thursdays from 3 to 5 PM and Fridays from 2 to 4 PM). If a student does not opt for minor programme, he/she can be given remedial class.

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## Semester V

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
Α	ECT 301	LINEAR INTEGRATED CIRCUITS	3-1-0	4	4
В	ECT 303	DIGITAL SIGNAL PROCESSING	3-1-0	4	11/1
С	≈6GT 305	COMMUNICATION	3-1-0-	IC	AL
D	ECT 307	CONTROL SYSTEMS	3-1-0	1	4
E 1/2	HUT300	INDUSTRIAL ECONOMICS AND FOREIGN TRADE	3-0-0	3	3
1000 <b>X</b> 0700	HUT310	MANAGEMENT FOR ENGINEERS	3-0-0	3	3
F	MCN301	DISASTER MANAGEMENT	2-0-0	2	· 野生体
5	ECL 331	ANALOG INTEGRATED CIRCUITS AND SIMULATION LAB	0-0-3	3	2
T	ECL 333	DIGITAL SIGNAL PROCESSING LAB	0-0-3	3	2
R/M/H	VAC	Remedial/Minor/Honours course	3-1-0	4**	4
	material massing.	TOTAL	10.00	27/31	23/27

#### NOTE:

- 1. Industrial Economics & Foreign Trade and Management for Engineers shall be offered in both S5 and S6. Institutions can advise students belonging to about 50% of the number of branches in the Institution to opt for Industrial Economics & Foreign Trade in S5 and Management for Engineers in S6 and vice versa.
- 2. \*All Institutions should keep 4 hours exclusively for Remedial class/Minor/Honours course (Tuesdays from 3 to 5 PM and Wednesdays from 3 to 5 PM). If a student does not opt for minor/honours programme, he/she can be given remedial class.

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## Semester VI

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
А	ECT 302	ELECTROMAGNETICS	3-1-0	4	4
В	ECT 304	VLSI CIRCUIT DESIGN	3-1-0/	14	M
С	-EGT 306	INFORMATION THEORY AND CODING	3-1-0-	10	4
D	ECTXXX	PROGRAM ELECTIVE I	2-1-0	13-4	N.35
E 1/2	HUT300	INDUSTRIAL ECONOMICS AND FOREIGN TRADE	3-0-0	3.	3
/2	нит310	MANAGEMENT FOR ENGINEERS	3-0-0	3	3
F	ECT 308	COMPREHENSIVE COURSE WORK	1-0-0	1	1
S	ECL 332	COMMUNICATION LAB	0-0-3	3	2
Т	ECD 334	MINIPROJECT	0-0-3	3	2
R/M/H	VAC	Remedial/Minor/Honours	3-1-0	4**	4
	As a second	course		25/20	22/27

- \*All Institutions should keep 4 hours exclusively for Remedial class/Minor/Honours course (Tuesdays from 3 to 5 PM and Wednesdays from 2 to 4 PM). If a student does not opt for minor/honours programme, he/she can be given remedial class.
- 3. Comprehensive Course Work: The comprehensive course work in the sixth semester of study shall have a written test of 50 marks. The written examination will be of objective type similar to the GATE examination and will be conducted by the University. Syllabus for comprehensive examination shall be prepared by the respective BoS choosing any 5 core courses studied from semester 3 to 5. The pass minimum for this course is 25. The course should be mapped with a faculty and classes shall be arranged for practising questions based on the core courses listed in the correction.
- 4. Mini project: It is introduced in sixth semester with a specific objective to strengthen the understanding of student's fundamentals through application of theoretical concepts. Mini project can help to boost their skills and widen the horizon of their thinking. The ultimate aim of an engineering student is to resolve a problem by applying theoretical knowledge. Doing more projects increases problem-solving skills. Students should identify a topic of interest in consultation with Faculty/Advisor. Review the literature and gather information pertaining to the chosen topic. State the objectives and develop a methodology to achieve the objectives. Carryout the design/fabrication or develop codes/programs to achieve the objectives. Demonstrate the novelty of the project through the results and outputs. The progress of the mini project is evaluated based on a minimum of two reviews. The review committee may be constituted by the Head of the Department. A project report is required at the end of the semester. The product has to be demonstrated for its full design specifications. Innovative design concepts, reliability considerations, aesthetics/ergonomic aspects taken care of in the project shall be given due weight. The internal evaluation will be made based on the product, the report and a viva-voce examination, conducted by a 3 member committee appointed by Head of the Department comprising HoD or a senior faculty member, Academic coordinator for that program, project guide/coordinator.

Total marks: 150, CIE 75 marks and ESE 75 marks

Split up for CIE

Attendance

Guide

Project Report

LOLU: 10

10

Evaluation by the Committee (will be evaluating the level of completion and demonstration of functionality/specifications, presentation, oral examination, work knowledge and involvement)

2014:40

4

## Semester VII

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
Α	ECT 401	MICROWAVES AND ANTENNAS	2-1-0	3	3
В	ECTXXX	PROGRAM ELECTIVE II	2-1-0	$A^3$ .	ΑN
С	ECTXXX	OPEN ELECTIVE	~2-1-0°	3	'A]
D	MCN401	INDUSTRIAL SAFETY ENGINEERING	2-1-0	130	
S	ECL 411	ELECTROMAGNETICS LAB	10-0-3	3	2
T	ECQ 413	SEMINAR	0-0-3	3	2
U	ECD 415	PROJECT PHASE I	0-0-6	6	2
R/M/H	VAC	Remedial/Minor/Honors course	3-1-0	4*	4
		TOTAL		24/28	15/19

## PROGRAM ELECTIVE II

SLOT	COURSE	COURSES			
	NO.		L-T-P	HOURS	CREDIT
	ECT 413	Optical Fiber Communication	Section 1981		<b>Z</b>
	ECT 423	Computer Networks	2-1-0		
	ECT 433	Opto-electronic Devices	2-1-0		
В	ECT 443	Instrumentation 510	2-1-0	3	3
	ECT 453	Error Control Codes	2-1-0		3
1	ECT 463 📆	Machine Learning	2-1-0		
	ECT 473	DSP Architectures	2-1-0		
		a direct	2-1-0		

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## OPEN ELECTIVE (OE)

The open elective is offered in semester 7. Each program should specify the courses (maximum 5) they would like to offer as electives for other programs. The courses listed below are offered by the Department of ELECTRONICS AND COMMUNICATION ENGINEERING for students of other

See to the top 1	HOLDING	CK.	COLALIA	CHALL	MINNIA	CLACILLA	CCUINO

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
	ECT 415	Mechatronics	2-1-0		
	ECT 425	Biomedical Instrumentation	2-1-0	AND AND DESCRIPTION OF THE PARTY OF THE PART	
	ECT/435	Electronic Hardware for Engineers	2-1-0	A3   A	3
C	ECT-445	IoT and Applications	2-1-0	HIVI	
	ECT 455	Entertainment Electronics	2-1-0	AI	

#### NOTE:

- 1. \*All Institutions should keep 4 hours exclusively for Remedial class/Minor/Honours course (Mondays from 10 to 12 and Wednesdays from 10 to 12 Noon). If a student does not opt for minor/honours programme, he/she can be given remedial class.
- 2. Seminar: To encourage and motivate the students to read and collect recent and reliable information from their area of interest confined to the relevant discipline from technical publications including peer reviewed journals, conference, books, project reports etc., prepare a report based on a central theme and present it before a peer audience. Each student shall present the seminar for about 20 minutes duration on the selected topic. The report and the presentation shall be evaluated by a team of faculty members comprising Academic coordinator for that program, seminar coordinator and seminar guide based on style of presentation, technical content, adequacy of references, depth of knowledge and overall quality of the report.

Total marks: 100, only CIE, minimum required to pass 50

Attendance		:10
Guide		: 20
Technical Content o	f the Report	. 30
Presentation		: 40

- 3. Project Phase I: A Project topic mustible selected either from research literature or the students themselves may propose suitable topics in consultation with their guides. The object of Project Work I is to enable the student to take up investigative study in the broad field of Electronics and Communication Engineering, either fully theoretical/practical or involving both theoretical and practical work to be assigned by the Department on a group of three/four students, under the guidance of a Supervisor. This is expected to provide a good initiation for the student(s) in R&D work. The assignment to normally include:
  - Survey and study of published literature on the assigned topic;
  - Preparing an Action Plan for conducting the investigation, including team work;
  - Working out a preliminary Approach to the Problem relating to the assigned topic;
  - Block level design documentation
  - Conducting preliminary Analysis/ Modelling/ Simulation/ Experiment/ Design/ Feasibility;

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- Preparing a Written Report on the Study conducted for presentation to the Department;
- > Final Seminar, as oral Presentation before the evaluation committee.

Total marks: 100, only CIE, minimum required to pass 50

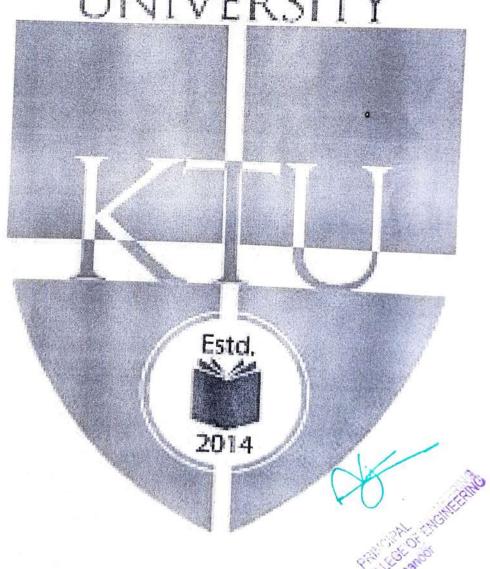
Guide : 30

Interim evaluation by the evaluation committee : 20

Final seminar : 30

The report evaluated by the evaluation committee : 20

The evaluation committee comprises Hop or a senior faculty member, Project coordinator and project supervisor.



## Semester VIII

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
	ECT 402	WIRELESS COMMUNICATION	2-1-0	3	3
3	ECTXXX	PROGRAM ELECTIVE III	2-1-0"	AI	AA
C	ECTXXX	PROGRAM ELECTIVE IV	2-1-0	310	<sup>3</sup> Д
D	ECTXXX	PROGRAM ELECTIVE V	2-1-0	<b>4</b>	34 1
E	ECT 404	COMPREHENSIVE VIVA VOCE	1-0-0	11. 1	1
U	ECD 416	PROJECT PHASE II	0-0-	12	4
R/M/	/H VAC	Remedial/Minor/Honors course	3-1-0	4*	4
		TOTAL		25/28	17/21

PROGRAM FLECTIVE III

ROGRA	IN ELECTIVE III	DELIBERA, "THE STANDING BY THE STANDING A	THE RESERVE OF THE PARTY OF THE	1	
SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
	ECT 414	Biomedical Engineering	2-1-0		
	ECT 424	Satellite Communication	2-1-0		3
	ECT 434	Secure Communication	2-1-0		
	ECT 444	Pattern Recognition	2-1-0	3	
В	ECT 454	RF Circuit Design	2-1-0		
	ECT 464	Mixed Signal Circuit Design	2-1-0		
	ECT 474	Entrepreneurship 510.	2-1-0		

PROGRAM ELECTIVE IV

KUGKA	INIELECTIVETY	CHEST ASSESSMENT DE LA CONTRACTOR DE LA	TO THE PERSON NAMED BY	20	
SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
	ECT 416	Modern Communication Systems	2-1-0		
	ECT 426	Real Time Operating Systems	2-1-0		3
	ECT 436	Adaptive Signal Processing	2-1-0	3	
	ECT 446	Microwave Devices and Circuits	2-1-0		
C	ECT 456	Speech and Audio Processing	2-1-0		
	ECT 466	Analog CMOS Design	2-1-0		
	ECT 476	Robotics	2-1-0		

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# PROGRAM ELECTIVE V

			_	,			SLOT
EC+ 478-	EC 468-	ECT 458	ECT 448	ECT 438	ECT 428	ECT 418	COURSE NO.
Organic Electronics	Renewable Energy Systems	Internet of Things	Low Power VLS	Computer Vision	Optimization Techniques	Mechatronics	COURSES
2-1-0	2-1-0	2-1-0	2-1-0	- 2-1-0	2-1-0	2-1-0	L-T-P
		10.4	9				L-T-P HOURS
			w				CREDIT

## NOTE

- \*All Institutions should keep 4 hours opt for minor/honours programme, he/she can be given remedial class. course (Mondays from 10 to 12 and Wednesdays from 10 to 12). If a student does not exclusively for Remedial class/Minor/Honours
- study shall have a viva voce for 50 marks. The viva voce shall be conducted based on the Comprehensive Course Viva: The comprehensive course viva in the eighth semester of mapped with a faculty and classes shall be arranged for practising questions based on the the end of the semester. the same three member committee assigned for final project phase II evaluation towards core subjects studied from third to eighth semester. The viva voce will be conducted by uploaded along with internal marks of other courses core courses listed in the curriculum. The mark will be treated as internal and should be The pass minimum for this course is 25. The course should be
- w of a Supervisor from the Departmen theoretical/practical or involving both theoretical and practical work, under the guidance Project Phase II: The object of Project Work II & Dissertation is to enable the student to work and technical leadership. Th laboratory/industry. This is expected extend further the investigative study taken up in Project 1 one or jointly with a Supervisor drawn from R&D yide a good training for the student(s) in R&D nt to normally include
- In depth study of the top in the light of the Report prepared under
- Review and finalization of the problem relating to the assigned
- Detailed Analysis/Modelling/Simulation/Design/Problem Solving/Experiment as
- directions; Final development of product/process, testing, results, conclusions and future
- Preparing a paper for Conference presentation/Publication in Journals, if possible;
- Preparing a Dissertation in the standard format for being evaluated by the Department;
- Final Presentation before a Committee

Total marks: 150, only CIE, minimum required to pass 75

Interim evaluation, 2 times in the semester by the evaluation committee : 50

Quality of the report evaluated by the above committee

(The evaluation committee comprises HoD or a senior faculty member, Project

Final evaluation by a three member committee

final evaluation committee comprises Industry/research institute and a senior faculty from a sister department. The same committee will conduct comprehensive course viva for 50 marks)

#### MINOR

Minor is an additional credential a student may earn if s/he does 20 credits worth of additional learning in a discipline other than her/his major discipline of B.Tech degree. The objective is to permit a student to customize their Engineering degree to suit their specific interests. Upon completion of an Engineering Minor, a student will be better equipped to perform interdisciplinary research and will be better employable. Engineering Minors allow a student to gain interdisciplinary experience and exposure to concepts and perspectives that may not be a part of their major degree programs.

The academic units offering minors in their discipline will prescribe the set of courses and/or other activities like projects necessary for earning a minor in that discipline. A specialist basket of 3-6 courses is identified for each Minor. Each basket may rest on one or more foundation courses. A basket may have sequences within it, i.e., advanced courses may rest on basic courses in the basket. S/he accumulates credits by registering for the required courses, and if the requirements for a particular minor are met within the time limit for the course, the minor will be awarded. This will be mentioned in the Degree Certificate as "Bachelor of Technology in xxx with Minor in yyy". The fact will also be reflected in the consolidated grade card, along with the list of courses taken. If one specified course cannot be earned during the course of the programme, that minor will not be awarded. The individual course credits earned, however, will be reflected in the consolidated grade card, estd.

(i) The curriculum/syllabus committee/Bos shall prepare syllabus for courses to be included in the curriculum from third to eight semesters for all branches. The minor courses shall be identified by M slot courses.

(ii) Registration is permitted for Minor at the beginning of third semester. Total credits required is 182 (162 + 20 credits from value added courses)

(iii) Out of the 20 Credits, 12 credits shall be earned by undergoing a minimum of three courses listed in the curriculum for minor, of which one course shall be a mini project based on the chosen area. They can do miniproject either in S7 or in S8. The remaining 8 credits could be acquired by undergoing 2 MOOCs recommended by the Board of studies and approved by the Academic Council or through courses listed in the curriculum. The classes for Minor shall be conducted along with regular classes and no extra time shall be required for conducting the courses.

(iv)There won't be any supplementary examination for the courses chosen for Minor.

(v) On completion of the program, "Bachelor of Technology in xxx with Minor in yyy" will be awarded.

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(vi)The registration for minor program will commence from semester 3 and the all academic units offering minors in their discipline should prescribe set of such courses. The courses shall be grouped into maximum of 3 baskets. The basket of courses may have sequences within it, i.e., advanced courses may rest on basic courses in the basket. Reshuffling of courses between various baskets will not be allowed. In any case, they should carry out a mini project based on tudents who have registered for B.Tech Minor in ELECTRONICS

the chosen area in S7 or S8. Students who courses listed below: I	AAA
the chosen area in S7 or S8. Students will communication can opt to study the courses listed below:	HIVI
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SE	I	BASKET I	-	•	-	IN	BASKET II		I	⊤CONRS	BASKET III COURSE NAME		н
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R			R S	編	200			R	D I T			S	11.
<b>S3</b>	ECT281	ELECTRONIC CIRCUITS	4	4		ECT283	ANALOG COMMUNICATI	4	4	ECT285	INTRODUCTION TO SIGNALS AND SYSTEMS	4	4
S4	ECT282	MICROCONT ROLLERS	4	4		ECT284	DIGITAL COMMUNICATI ON	4	4	ECT286	INTRODUCTION TO DIGITAL SIGNAL PROCESSING	4	4
S5	ECT381	EMBEDDED SYSTEM DESIGN	4	4	1. A. S.	ECT383	COMMUNICATI ON SYSTEMS	4	4	ECT385	TOPICS IN DIGITAL IMAGE PROCESSING	4	4
S6	ECT382	VLSI CIRCUITS	4	4		ECT384	DATA NETWORKS	4	4	ECT386	TOPICS IN COMPUTER VISION	4	4
57	ECD481	MINIPROJECT	4	4		ECD481	MINIPROJECT	4	4	ECD481	MINIPROJECT		4
88	ECD482	MINIPROJECT	4	4		ECD482	MINIPROJECT ESTO.	4	4	ECD482	MINIPROJECT	4	4

#### **HONOURS**

Honours is an additional credential a student may earn if s/he opts for the extra 20 credits needed for this in her/his own discipline. Honours is not indicative of class. KTU is providing this option for academically extra brilliant students to acquire Honours. Honours is intended for a student to gain expertise/specialise in an area inside his/her major B.Tech discipline and to enrich knowledge in emerging/advanced areas in the branch of engineering concerned. It is particularly suited for students aiming to pursue higher studies. Upon completion of Honours, a student will be better equipped to perform research in her/his branch of engineering. On successful accumulation of credits at the end of the programme, this will be mentioned in the Degree Certificate as "Bachelor of Technology in xxx, with Honours." The fact will also be reflected in the consolidated grade card, along with the list of courses taken. If one specified course cannot be earned during the course of the programme, Honours will not be awarded. The individual course credits earned, however, will be reflected in the consolidated grade card.

The courses shall be grouped into maximum of 3 groups, each group representing a particular specialization in the branch. The students shall select only the courses from same group in all semesters. It means that the specialization is to be fixed by the student and cannot be changed subsequently. The internal evaluation, examination and grading shall be exactly as for other mandatory courses. The Honours courses shall be identified by H slot courses

- The curriculum/syllabus committee Bos shall prepare syllabus included in the curriculum from fourth to eight semesters for all branches. The (i) honours courses shall be identified by H slowcourses
- Registration is permitted for Honours at the beginning of fourth semester. Total credits required is 182 (162 + 20 credits from value added courses). (ii)
- Out of the 20 Credits, 12 credits shall be earned by undergoing a minimum of three courses listed in the curriculum for honours, of which one course shall be a mini (iii) project based on the chosen area. The remaining 8 credits could be acquired by undergoing 2 MOOCs recommended by the Board of studies and approved by the Academic Council or through courses listed in the curriculum. The classes for Honours shall be conducted along with regular classes and no extra time shall be required for conducting the courses. The students should earn a grade of 'C' or better for all
  - There won't be any supplementary examination for the courses chosen for honours.
  - On successful accumulation of credits at the end of the programme, "Bachelor of (iv) Technology in xxx, with Honours" will be awarded if overall CGPA is greater than or (v) equal to 8.5, earned a grade of 'C' or better for all courses chosen for honours and without any history of 'F' Grade.
- The registration for Honours program will commence from semester 4 and the all academic units offering honours in their discipline should prescribe set of such (vi) courses. The courses shall be grouped into maximum of 3 groups, each group representing a particular specialization in the branch. The students shall select only the courses from same group in all semesters. It means that the specialization is to be fixed by the student and cannot be changed subsequently. In any case, they should carry out a mini project based on the chosen area in S8. Students who have registered for B.Tech Honours in ELECTRONICS AND COMMUNICATION ENGINEERING can opt to study the courses listed below:

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NANOFLECTRO NICS  NANOFLECTRO NICS  PROCESSES FOR COMMUNICATION  SYSTEM DESIGN  A 4 ECT395  ECT393  FPGA BASED SYSTEM DESIGN  A 5 ECT395  SYSTEM DESIGN  AUTOMATION  FOR SIGNAL PROCESSING FOR SIGNAL PROCESSING FOR SIGNAL PROCESSING FOR SIGNAL PROCESSING MULTIUSER COMMUNICATION SYSTEMS  FOR SIGNAL PROCESSING AND ESTIMATION AND ESTIMATION AND ESTIMATION AND ESTIMATION AND ESTIMATION AND ESTIMATION THEORY  FOR SIGNAL PROCESSING AND AND ESTIMATION THEORY  ANALYSIS OF ANTENNAS  FOR SIGNAL PROCESSING AND ANALYSIS OF ANTENNAS  AND AND ANALYSIS OF ANTENNAS  FOR SIGNAL PROCESSING AND ANALYSIS OF ANTENNAS AND		-	-
SECT392 NANOFLECTRO A 4 ECT294 STOCHASTIC PROCESSES FOR COMMUNICATION SYSTEM DESIGN AUTOMATION  SECT393 FPGA BASED SYSTEM DESIGN  SYSTEM DESIGN  SECT394 ELECTRONIC DESIGN AUTOMATION  STOCHASTIC PROCESSES FOR COMMUNICATION SYSTEMS  SYSTEM DESIGN  AUTOMATION  SYSTEMS  SYSTEM			HOUR
SS ECT393 FPGA BASED 4 4 ECT395 DETECTION AND 4 4 ECT397 COMPUTATION  SYSTEM DESIGN  SYSTEM DESIGN  SETTIMATION THEORY  SETTIMATION THEORY  SETTIMATION THEORY  SETTIMATION THEORY  SETTIMATION THEORY  SOME DESIGN AUTOMATION  SYSTEMS  STATEMATION THEORY  STATEMATION THEORY  STATEMATION THEORY  SYSTEMS  STATEMATION THEORY  SYSTEMS  SYSTE		4	4
SE ECT394 ELECTRONIC DESIGN AUTOMATION THEORY  ST ECT495 RF MEMS  4 4 ECT396 MIMO AND MULTIUSER COMMUNICATION SYSTEMS  4 4 ECT497 DESIGN AND ANALYSIS OF ANTENNAS  ST ECT495 RF MEMS  4 4 ECT497 DESIGN AND ANALYSIS OF ANTENNAS  SE ECT495 ANTENNAS  COMMUNICATION THEORY  MULTIRATE SIGNAL PROCESSING AND AND ANALYSIS OF ANTENNAS			
DESIGN AUTOMATION  MULTIUSER COMMUNICATION SYSTEMS  FECTA95 RF MEMS  4 4 ECT497 DESIGN AND ANALYSIS OF ANTENNAS  MULTIUSER COMMUNICATION SYSTEMS  4 4 ECT499 MULTIRATE SIGNAL PROCESSING AND		4	
REMEMS 4 4 ECT497 DESIGN AND ANALYSIS OF ANTENNAS 4 4 ECT499 MULTIRATE SIGNAL PROCESSING AND	1	1	4
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S8 ECD496 MINIPROJECT 4 4 ECD496 MINIPROJECT 4 4 ECD496 MINIPROJECT			

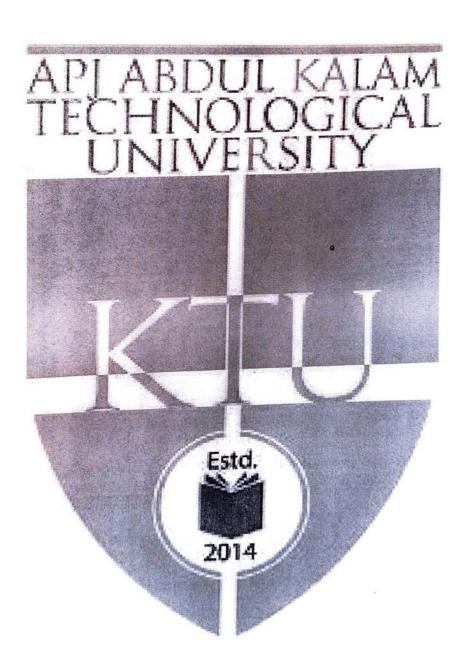
## INDUCTION PROGRAM

There will be three weeks induction program for first semester students. It is a unique threeweek immersion Foundation Programme designed especially for the fresher's which includes a wide range of activities right from workshops, lectures and seminars to sports tournaments, social work and much more. The programme is designed to mould students into well-rounded individuals, aware and sensitized to local and global conditions and foster their creativity, inculcate values and ethics, and help students to discover their passion. Foundation Programme also serves as a platform for the fresher's tolinteract with their batchmates and seniors and start working as a team with them. The program is structured around the following five themes:

The programme is designed keeping in mind the following objectives:

- Values and Ethics: Focus on fostering a strong sense of ethical judgment and moral
- Creativity: Provide channels to exhibit and develop individual creativity by expressing themselves through art, craft, music, singing, media, dramatics, and other creative
- Leadership, Communication and Teamwork: Develop a culture of teamwork and group communication.
- Social Awareness: Nurture a deeper understanding of the local and global world and our place in at as concerned citizens of the world.

 Physical Activities & Sports: Engage students in sports and physical activity to ensure healthy physical and mental growth.



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## **CURRICULUM I TO VIII: ELECTRICAL & ELECTRONICS ENGINEERING**

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

SI.	Category	Code	Credits
No	Humanities and Social Sciences including Management	HMC	8
1	courses	LILY	
2	Basic Science courses	BSO	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	1	62
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:

	100000		REPORT OF THE PROPERTY OF THE	SEEMER ALIXANS	STATISTICS OF THE PARTY OF THE	91 51899	1895 A NEW TOWN	HADDOODHT:	
Sem	1	2	3	4	5	6	7	8	Total
Credits	17	21	22	27) 1	23	23	15	17	160
Activity Points		50				19	50		
Credits for Activity				2		EAPP.			2
G.Total	1.00				100				162

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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, Design Engineering, Materials Engineering etc. Humanities and Social Sciences including Management courses: English, Humanities, Accounting, Professional Ethics, Management, Finance &

Mandatory pon-credit courses Sustainable Engineering, 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 E C L 2 0 1. 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 1.03 available

Table 1: Code for the courses

Code	Description 12910
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)
0	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. 1,528, 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, AB	Course Prefix	SL NO	Department	Course Prefix
		AO	20	Food Technology	FT
1	Aeronautical Engg Applied Electronics &	H	21	Humanities	HU
2	Instrumentation	L AE L	22	Industrial Engg	IE
3	Artificial Intelligence	Al	24		IT
4	Artificial Intelligence & Data Science	AD	23	Information Technology	
5	Automobile	AU	24	Instrumentation & Control	IC
6	Biomedical Engg	ВМ	25	Mandatory Courses	МС
7	Biotechnology	вт	26	Mathematics	MA
8	Chemical Engg	СН	27	Mechanical Engg	ME
9	Chemistry	CY	28	Mechatronics	MR
10	Civil Engg	CE	29	Metallurgy	MT
11	Computer Science	CS	30	Mechanical (Auto)	MU
12	Computer Science (Artificial Intelligence)	CAE	std!	Mechanical (Prod)	MP
13	Computer Science (Artificial Intelligence & Machine	СМ	32	Naval & Ship Building	SB
14	Learning) Computer Science (Data Science)	CD	33	Physics	PH
15	Computer Science Cyber Security	CC C	34	Polymer Engg	PO
16	Electronics & Biomedical	EB	35	Production Engg	
17	Electronics & Communication	EC	36	Robotics and Automation	
18	Electrical and Computer	ЕО	37	Safety & Fire Engg	FS
19	Topics to the top the commence would	EE			

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## SEMESTER I

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CRED
Α	MAT 101	LINEAR ALGEBRA AND CALCULUS	3-1-0	4	4
В	PHT 100	ENGINEERING PHYSICSA	3-1-0	A RA	4
1/2	CYT 100	ENGINEERING CHEMISTRY	3-1-0	4	4
C 1/2	EST 100	ENGINEERING MECHANICS	2-1-0	7 3 L	3
-, -	EST 110	ENGINEERING GRAPHICS	2-0-2	4	3
D 1/2	EST 120	BASICS OF CIVIL & MECHANICAL ENGINEERING	4-0-0	4	4
	EST 130	BASICS OF ELECTRICAL & ELECTRONICS ENGINEERING	4-0-0	4	4
E	HUN 101	LIFE SKILLS	2-0-2	4	
S 1/2	PHL 120	ENGINEERING PHYSICS LAB	0-0-2	2	1
	CYL 120	ENGINEERING CHEMISTRY LAB	0-0-2	2	1
T 1/2	ESL 120	CIVIL & MECHANICAL WORKSHOP	0-0-2	2	1
	ESL 130	ELECTRICAL & ELECTRONICS WORKSHOP	0-0-2	2	1
		TOTAL		23/24 *	17

Estd.

\*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

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#### SEMESTER II

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
Α	MAT 102	VECTOR CALCULUS, DIFFERENTIAL EQUATIONS AND TRANSFORMS	3-1-0	4	4
В	PHT-100 T	ENGINEERING PHYSICS A	3-1-0	1 4 A	4
1/2	CYT 100	ENGINEERING CHEMISTRY	3-1-0	141	4
С	EST 100	ENGINEERING MECHANICS	2-1-0	13L	3
1/2	EST 110	ENGINEERING GRAPHICS	2-0-2	4	3
D	EST 120	BASICS OF CIVIL & MECHANICAL	4-0-0	4	4
1/2	EST 130	BASICS OF ELECTRICAL & ELECTRONICS ENGINEERING	4-0-0	4	4
E	HUN 102	PROFESSIONAL COMMUNICATION	2-0-2	4	
F	EST 102	PROGRAMMING IN C	2-1-2	.5	4
5	PHL 120	ENGINEERING PHYSICS LAB	0-0-2	2	1
1/2	CYL 120	ENGINEERING CHEMISTRY LAB	0-0-2	2	1
T	ESL 120	CIVIL & MECHANICAL WORKSHOP	0-0-2	2	1
1/2	ESL 130	ELECTRICAL & ELECTRONICS WORKSHOP	0-0-2	2	1
		TOTAL Estd.		28/29	21

#### NOTE:

- Engineering Physics A 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 A in SI and Engineering Chemistry in S2 & vice versa. Students opting for Engineering Physics A 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.
- 2. 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 SI and Engineering Graphics in

3. 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, 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.

#### 4. 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. Estd.

## 5. 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 selfexpression, 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.

## SEMESTER III

SLOT	COURSE NO	COURSES	L-T-P	HOURS	CREDIT
Α	MAT201	PARTIAL DIFFERENTIAL EQUATION AND COMPLEX ANALYSIS	3-1-0	4	4
В	EET201	CIRCUITS AND NETWORKS A	2-2-0	M	4
С	EET203	MEASUREMENTS AND INSTRUMENTATION	3-1-0	41	4
D	EET205	ANALOG ELECTRONICS	3-1-0	4	4
E 1/2	EST200	DESIGN & ENGINEERING	2-0-0	2	2
1/2	HUT200	PROFESSIONAL ETHICS	2-0-0	2	2
F	MCN201	SUSTAINABLE ENGINEERING	2-0-0	2	
S	EEL201	CIRCUITS AND MEASUREMENTS LAB	0-0-3	3	2
Т	EEL203	ANALOG ELECTRONICS LAB	0-0-3	3	2
R/M	VAC	REMEDIAL/MINOR COURSE	3-1-0	4 *	4
		TOTAL		26/30	22/26

#### NOTE:

- Design & Engineering and Professional Ethics shall be offered in both S3 and S4.
   Institutions can advise students belonging to about 50% of the number of branches in the Institution to opt for Design & Engineering in S3 and Professional Ethics in S4 & vice versa.
- \*All Institutions shall keep 4 hours exclusively for Remedial class/Minor course (Thursdays from 3 to 5 PM and Fridays from 2 to 4 PM). If a student does not opt for minor programme, he/she can be given remedial class.

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#### SEMESTER IV

SLOT	COURSE NO	COURSES	L-T-P	HOURS	CREDI
A	MAT 204	PROBABILITY, RANDOM PROCESSES AND NUMERICAL METHODS	3-1-0	4	4
В	EET202) T	DC MACHINES AND TRANSFORMERS	2-2-9	$\Lambda^4\Lambda$	4
С	EET204	ELECTROMAGNETIC THEORY	3-1-0	AA	4
D	EET206	DIGITAL ELECTRONICS	3-1-0	Т Д	4
E 1/2	EST200	DESIGN & ENGINEERING	1-0-0	2	2
1/2	HUT200	PROFESSIONAL ETHICS	2-0-0	2	2
F	MCN202	CONSTITUTION OF INDIA	2-0-0	2	
S	EEL202	ELECTRICAL MACHINES LAB I	0-0-3	<sup>3,0</sup> /3	2
Т	EEL204	DIGITAL ELECTRONICS LAB	0-0-3	3	2
R/M/H	VAC	REMEDIAL/MINOR/HONOURS COURSE	3-1-0	4*	4
	Cont.	TOTAL		26/30	22/26

### NOTE:

- 1. Design & Engineering and Professional Ethics shall be offered in both S3 and S4. Institutions can advise students belonging to about 50% of the number of branches in the Institution to opt for Design & Engineering in S3 and Professional Ethics in S4 & vice versa.
- \*All Institutions should keep 4 hours exclusively for Remedial class/Minor course (Thursdays from 3 to 5 PM and Fridays from 2 to 4 PM). If a student doesnot opt for minor programme, he/she can be given remedial class.

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## SEMESTER V

MESTER '	The second secon	COURSES	L-T-P	HOURS	CREDIT
SLOT	COURSE NO	A STATE OF THE STA	2.10	4	4
A	EET301	POWER SYSTEMS I	3-1-0	restation and a	
		MICROPROCESSORS AND	3-1-0	h 4 A	4
В	X303) [	MICROCONTROLLERS	3:1-0	JYL	4
С	EE1305	SIGNALS AND SYSTEMS	10	AI	4
D	EET30Z	SYNCHRONOUS AND INDUCTION	3-1-0	14	4
	T	MACHINES INDUSTRIAL ECONOMICS & FOREIGN	3-0-0	3	3
E 1/2	нит300	TRAD FORMAL PROPERTY AND THE PROPERTY AN	3-0-0	3	3
1/2	HUT310	MANAGEMENT FOR ENGINEERS	3-0-0		
F	MCN301	DISASTER MANAGEMENT	2-0-0	2	-
r .		S WEST CONTROL OF THE SECOND	0-0-3	3	2
S	EEL331	MICROPROCESSORS AND MICROCONTROLLERS LAB		3	2
T	EEL333	ELECTRICAL MACHINES LAB II	0-0-3	3	
D /3 4 /11	VAC	REMEDIAL/MINOR/HONOURS	3-1-0	4*	4
R/M/H	VAC	COURSE		27/33	23/2
		TOTAL			25

#### NOTE:

- 1. Industrial Economics & Foreign Trade and Management for Engineers shall be offered in both S5 and S6. Institutions can advise students belonging to about 50% of the number of branches in the Institution to opt for Industrial Economics & Foreign Trade in S5 and Management for Engineers in S6 and vice versa.
- 2. \*All Institutions should keep 4 hours exclusively for Remedial class/Minor/Honours course (Tuesdays from 3 to 5 PM and Wednesdays from 3 to 5 PM). If a student does not opt for minor/honours programme, he/she can be given remedial class.

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C F IVI	E.31	_,,	

MESTER	VI	COURSES	L-T-P	HOURS	CREDI
SLOT	COURSE NO	LINEAR CONTROL SYSTEMS	2-2-0	4	4
Α	EET302		3-1-0	14,	4
В	EET304) [	POWER SYSTEMS II	3-1-0	M	4
C	EETXXX	PROGRAM ELECTIVELL	2-1-0/	AL	3
E	HUT300	INDUSTRIALIECONOMICS & FOREIGN	3-0-0	3	3
1/2	HUT310	MANAGEMENT FOR ENGINEERS	3-0-0	3	3
F	EET308	COMREHENSIVE COURSE WORK	1-0-0	1	1
S	EEL332	POWER SYSTEMS LAB	0-0-3	3	2°
Т	EEL334	POWER ELECTRONICS LAB	0-0-3	3	2
R/M/H	VAC	REMEDIAL/MINOR/HONOURS COURSE	3-1-0	4*	4
		TOTAL		28/32	23/27

### PROGRAM ELECTIVE I

SLOT	COURSE NO	COURSES ESTO.	L-T-P	HOURS	CREDIT
	EET312	BIOMEDICAL INSTRUMENTATION	2-1-0		
	EET322	RENEWABLE ENERGY SYSTEMS	2-1-0		
D	EET332	COMPUTER ORGANIZATION	2-1-0	3	3
	EET342	HIGH VOLTAGE ENGINEERING	2-1-0	-11	-
	EET352	OBJECT ORIENTED PROGRAMMING	2-1-0		
	EET362	MATERIAL SCIENCE	2-1-0		
	EET372	SOFT COMPUTING	2-1-0		

#### NOTE:

1. Industrial Economics & Foreign Trade and Management for Engineers shall be offered in both S5 and S6. Institutions can advise students belonging to about 50% of the number of branches in the Institution to opt for Industrial Economics & Foreign Trade in S5 and Management for Engineers in S6 and vice versa.

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 \*All Institutions should keep 4 hours exclusively for Remedial class/Minor/Honours course (Tuesdays from 3 to 5 PM and Wednesdays from 2 to 4 PM). If a student does not opt for minor/honours programme, he/she can be given remedial class.

3. Comprehensive Course Work: The comprehensive course work in the sixth semester of study shall have a written test of 50 marks. The written examination will be of objective type similar to the GATE examination and will be conducted by the University. Syllabus for comprehensive examination shall be prepared by the respective BoS choosing any 5 core courses studied from semester 3 to 5. The pass minimum for this course is 75. The course should be mapped with a faculty and classes shall be arranged for practising questions based on the core fourses listed in the curriculum.

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## SEMESTER VII

MESTER	VII		L-T-P	HOURS	CRED
SLOT	COURSE NO	COURSES	or the		
SLUT	COUNTER	ADVANCED CONTROL SYSTEMS	2-1-0	3	3
Α	EET401	ADVANCED CONTROL 31312		2	3
В	EETXXX.	PROGRAM ELECTIVE II	2-1-0	M	
U	ALL	OPEN ELECTIVE	2:1-0	3	3
С	EETXXX	I IN I VII II .	1010	3	
D	MCN401	INDUSTRIAL SAFETY ENGINEERING	2-1-0/	M. Macon	
S	EEL411	CONTROL SYSTEMS LAB	0-0-3	3	2
3	CLL411		0-0-3	3	2
T	EEQ413	SEMINAR	0-0-5		
U	EED415	PROJECT PHASE I	0-0-6	6	2
- / /- 1	WAG	REMEDIAL/MINOR/HONOURS	3-1-0	4*	4
R/M/H	VAC	COURSE			15/10
	-	TOTAL		24/28	15/19

### PROGRAM ELECTIVE II

SLOT	COURSE NO	COURSES	L-T-P	HOURS	CREDIT
JLU.				STATUTOR	
	EET413	ELECTRIC DRIVES	2-1-0		
	EET423	DIGITAL CONTROL SYSTEMS	2-1-0	PAYEMBERS	
В	EET433	MODERN OPERATING SYSTEMS	2-1-0	3	3
100	EET443	DATA STRUCTURES	2-1-0		
	EET453	DIGITAL SIGNAL PROCESSING	2-1-0		
	EET463	ILLUMINATION TECHNOLOGY	2-1-0		
	EET473	DIGITAL PROTECTION OF POWER	2-1-0		
	No.	SYSTEMS		)	

#### **OPEN ELECTIVES**

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The open elective is offered in semester 7. Each program should specify the courses (maximum 5) they would like to offer as electives for other programs. For example the courses listed below are offered by the Department of ELECTRICAL & ELECTRONICS ENGINEERING for students of other undergraduate branches offered in the college under KTU.

		ELECTRICAL & CO	T 0	HOURS	CREDIT
SLOT	COURSE NO.	COURSES	L-T-P	HOURS	Citization
	<b>G</b>		2-1-0		
	EET415	CONTROL SYSTEMS ENGINEERING	2-1-0		
С	EET425	INTRODUCTION TO POWER PROCESSING	2-1-0	3	3
C	EET435	RENEWABLE ENERGY SYSTEMS	12-1-0	1. 4	
	EET445	ELECTRIC VEHICLES	2-1-0	LIVI	
	EET455	ENERGY MANAGEMENT	- Company	AT	

NOTE:

- \*All Institutions should keep 4 hours exclusively for Remedial class/Milior/Honours course (Mondays from 10 to 12 and Wednesdays from 10 to 12 Noon). If a student does not opt for minor/honours programme, he/she can be given remedial class.
- 2. Seminar: To encourage and motivate the students to read and collect recent and reliable information from their area of interest confined to the relevant discipline from technical publications including peer reviewed journals, conference, books, project reports etc., prepare a report based on a central theme and present it before a peer audience. Each student shall present the seminar for about 20 minutes duration on the selected topic. The report and the presentation shall be evaluated by a team of faculty members comprising Academic coordinator for that program, seminar coordinator and seminar guide based on style of presentation, technical content, adequacy of references, depth of knowledge and overall quality of the report.

Total marks: 100, only CIE, minimum required to pass 50

Attendance : 10
Guide : 20
Technical Content of the Report : 30
Presentation : 40

- 3. Project Phase I: A Project topic must be selected either from research literature or the students themselves may propose suitable topics in consultation with their guides. The object of Project Work I is to enable the student to take up investigative study in the broad field of Electrical & Electronics Engineering, either fully theoretical/practical or involving both theoretical and practical work to be assigned by the Department on a group of three four students, under the guidance of a Supervisor. This is expected to provide a good initiation for the student(s) in R&D work. The assignment to normally include:
  - Survey and study of published literature on the assigned topic;
  - Preparing an Action Plan for conducting the investigation, including team work;
  - Working out a preliminary Approach to the Problem relating to the assigned topic;
  - Block level design documentation

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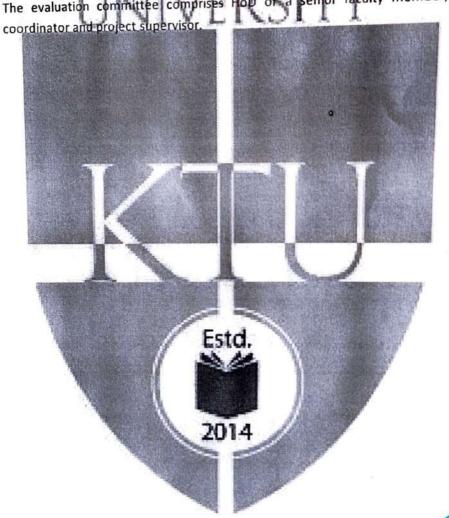
> Conducting preliminary Analysis/ Modelling/ Simulation/ Experiment/

> Preparing a Written Report on the Study conducted for presentation to the

Final Seminar, as oral Presentation before the evaluation committee.

Total marks: 100, only CIE, minimum required to pass 50 Interim evaluation by the evaluation committee Final Seminar The report evaluated by the evaluation committee

The evaluation committee comprises HoD on a senior faculty member, Project



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#### **SEMESTER VIII**

SLOT	COURSE NO	COURSES	L-T-P	HOURS	CREDIT
Α	EET402	ELECTRICAL SYSTEM DESIGN AND ESTIMATION	2-1-0	3	3
В	TCXXI	PROGRAM ELECTIVE III KA	2-1-0	$\Lambda^3 \Lambda$	3
С	EETXXX	PROGRAM ELECTIVE IV	2-1-0	43 k	3
D	EETXXX	PROGRAM ELECTIVE V	2-1-0	1,3	3
Т	EET404	COMPREHENSIVE COURSE VIVA	1[0-0	1	1
U	EED416	PROJECT PHASE II	0-0-12	12	4
R/M/H	VAC	REMEDIAL/MINOR/HONOURS COURSE	3-1-0	4*	4
		TOTAL	不知識	25/29	17/21

## PROGRAM ELECTIVE III

SLOT	COURSE NO	COURSES	L-T-P	HOURS	CREDIT		
	EET414	ROBOTICS	2-1-0				
	EET424	ENERGY MANAGEMENT	GEMENT 2-1-0				
В	EET434	SMART GRID TECHNOLOGIES	2-1-0	3.	3		
	EET444	ELECTRICAL MACHINE DESIGN	2-1-0				
	EET454	SWITCHED MODE POWER CONVERTERS	2-1-0				
	EET464	COMPUTER AIDED POWER SYSTEM ANALYSIS	2-1-0				
	EET474 '	MACHINE LEARNING	2-1-0	P.			

## PROGRAM ELECTIVE IV

SLOT	COURSE NO	consta	L-T-P	HOURS	CREDIT
	EET416	NONLINEAR SYSTEMS	2-1-0		
	EET426	SPECIAL ELECTRIC MACHINES	2-1-0		
C	EET436	POWER QUALITY	2-1-0	3	3
	EET446	COMPUTER NETWORKS	2-1-0		
	EET456	DESIGN OF POWER ELECTRONIC SYSTEMS	2-1-0		
	EET466	HVDC & FACTS	2-1-0		
	EET476	ADVANCED ELECTRONIC DESIGN	2-1-0		

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### PROGRAM ELECTIVE V

SLOT	COURSE NO	COURSES	L-T-P	HOURS	CREDIT
d.	EET418	ELECTRIC AND HYBRID VEHICLES	2-1-0		
D	EET428	INTERNET OF THINGS ENERGY STORAGE SYSTEMS	2-1-0	3	3
	EET448 EET458	ROBUST AND ADAPTIVE CONTROL SOLAR PV SYSTEMS	2-1-0 2-1-0	ΪÅΙ	
	EET468_	INDUSTRIAL INSTRUMENTATION &AUTOMATION	2-1-0	AL	
	EET478	BIG DATA ANALYTICS	2-1-0		

### NOTE

1. \*All Institutions should keep 4 hours exclusively for Remedial class/Minor/Honours course (Mondays from 10 to 12 and Wednesdays from 10 to 12). If a student does not opt for minor/honours programme, he/she can be given remedial class.

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- 2. Comprehensive Course Viva: The comprehensive course viva in the eighth semester of study shall have a viva voce for 50 marks. The viva voce shall be conducted based on the core subjects studied from third to eighth semester. The viva voce will be conducted by the same three member committee assigned for final project phase II evaluation towards the end of the semester. The pass minimum for this course is 25. The course should be mapped with a faculty and classes shall be arranged for practising questions based on the core courses listed in the curriculum. The mark will be treated as internal and should be uploaded along with internal marks of other courses.
- 3. Project Phase II: The object of Project Nork II & Dissertation is to enable the student to extend further the investigative study taken up in Project 1, either fully theoretical/practical or involving both theoretical and practical work, under the guidance of a Supervisor from the Department alone or jointly with a Supervisor drawn from R&D laboratory/Industry. This is expected to provide a good training for the student(s) in R&D work and technical leadership. The assignment to normally include:
  - In depth study of the topic assigned in the light of the Report prepared under Phasel;
  - Review and finalization of the Approach to the Problem relating to the assigned topic;
  - Detailed Analysis/Modelling/Simulation/Design/Problem Solving/Experiment as needed;

- > Final development of product/process, testing, results, conclusions and future directions;
- Preparing a paper for Conference presentation/Publication in Journals, if possible;
- > Preparing a Dissertation in the standard format for being evaluated by the

Interim evaluation, 2 times in the semester by the evaluation committee : 50

Quality of the report evaluated by the above committee : 30

(The evaluation committee comprises HoD or a senior faculty member, Project coordinator and project supervisor).

Final evaluation by a three-member committee :40

(The final evaluation committee comprises Project coordinator, expert from Industry/research Institute and a senior faculty from a sister department. The same committee will conduct comprehensive course viva for 50 marks).

#### MINOR

Minor is an additional credential a student may earn if s/he does 20 credits worth of additional learning in a discipline other than her/his major discipline of B.Tech. degree. The objective is to permit a student to customize their Engineering degree to suit their specific interests. Upon completion of an Engineering Minor, a student will be better equipped to perform interdisciplinary research and will be better employable. Engineering Minors allow a student to gain interdisciplinary experience and exposure to concepts and perspectives that may not be a part of their major degree programs.

The academic units offering minors in their discipline will prescribe the set of courses and/or other activities like projects necessary for earning basket of 3-6 courses is identified for each Minor foundation courses. A basket may have sequences within it, i.e., advanced courses may rest on basic courses in the basket. S/he accumulates credits by registering for the required courses, and if the requirements for a particular minor are met within the time limit for the course, the minor will be awarded. This will be mentioned in the Degree Certificate as "Bachelor of Technology in xxx with Minor in yyy". The fact will also be reflected in the consolidated grade card, along with the list of courses taken. If one specified course cannot be earned during the course of the programme, that minor will not be awarded. The individual course credits earned, however, will be reflected in the consolidated grade card.

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- (i) The curriculum/syllabus committee/BoS shall prepare syllabus for courses to be included in the curriculum from third to eight semesters for all branches. The minor courses shall be identified by M slot courses.
- (ii) Registration is permitted for Minor at the beginning of third semester. Total credits required is 182 (162 + 20 credits from value added courses)
- (iii) Out of the 20 Credits, 12 credits shall be earned by undergoing a minimum of three courses listed in the curriculum for minor, of which one course shall be a mini project based on the chosen area. They can do miniproject either in S7 or in S8. The remaining 8 credits could be acquired by undergoing 2 MOOCs recommended by the Board of studies and approved by the Academic Council or through courses listed in the curriculum. The classes for Minor shall be conducted along with regular classes and no extra time shall be required for conducting the courses.
- (iv) There won't be any supplementary examination for the courses chosen for Minor.
- (v) On completion of the program, "Bachelor of Technology in xxx with Minor in yyy" will be awarded.
- (vi) The registration for minor program will commence from semester 3 and the all academic units offering minors in their discipline should prescribe set of such courses. The courses shall be grouped into maximum of 3baskets. The basket of courses may have sequences within it, i.e., advanced courses may rest on basic courses in the basket. Reshuffling of courses between various baskets will not be allowed. In any case, they should carry out a mini project based on the chosen area in S7 or S8. Students who have registered for B. Tech Minor in ELECTRICAL & ELECTRONICS ENGINEERING can opt to study the courses listed below:

S e	BASKET I					BASKET II				BASKET III		
m e st er	Course No.	Course Name	H O U R S	R E	Course No.	Course Name Estd,	H C U R	R	Course No.	Course Name	(	
\$3	EET281	ELECTRIC CIRCUITS	4	4	EET 283	INTRODUCTION TO POWER ENGINEERING	4	4	EET 285	DYNAMIC CIRCUITS AND SYSTEMS	4	4
<b>S4</b>	EET 282	ELECTRICAL MACHINES	4	4	EET 284	ENERGY SYSTEMS	4	4	EET 286	PRINCIPLES OF INSTRUMENTATI ON	4	4
S5	EET 381	SOLID STATE POWER CONVERSION	4	4	EET 383	SOLAR AND WINDENERGY CONVERSION SYSTEMS	4	4	EET 385	CONTROL SYSTEMS	4	4
<b>S6</b>	EET 382	POWER SEMICONDUCTOR DRIVES	4	4	EET 384	INSTRUMENTATION AND AUTOMATION OF POWER PLANTS	4	4	EET 386	DIGITAL CONT	4	4
57	EED 481	MINIPROJECT	4	4	EED 481	MINIPROJECT	4	4	EED 481	MINIPROJECT	4	4

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<b>S8</b>	EED 482	MINIPROJECT	4	4	EED 482	MINIPROJECT	4	4	EED 482	MINIPROJECT	4	4
20	LLU 402	WIIIWII NOSEET		,	225 102	THIRTH HOSEET				l	Western Consider House Asset Management Co.	Section and administration of the section of the se

Notes on Minor from Electrical Engineering Department:

Students have to credit additional 5 courses (20 credits) to receive minor in Electrical and Electronics Engineering. While choosing the minor basket, at least two courses in the selected basket should have contents different from the courses in the curriculum of the parent branch. (This is necessary in the case of related branches like Electronics and Communication, Electronics and Instrumentation, Applied Electronics and Instrumentation, Electronics and Biomedical, Computer Science and Engineering etc.) In case where the student chooses a basket with only two courses different from their parent curriculum, the remaining courses have to be selected from the approved MOOC courses. This restriction may be incorporated in the regulations/curriculum.

#### HONOURS

Honours is an additional credential a student may earn if she/he opts for the extra 20 credits needed for this in her/his own discipline. Honours is not indicative of class. KTU is providing this option for academically extra brilliant students to acquire Honours. Honours is intended for a student to gain expertise/specialise in an area inside his/her major B.Tech discipline and to enrich knowledge in emerging/advanced areas in the branch of engineering concerned. It is particularly suited for students aiming to pursue higher studies. Upon completion of Honours, a student will be better equipped to perform research in her/his branch of engineering. On successful accumulation of credits at the end of the programme, this will be mentioned in the Degree Certificate as "Bachelor of Technology in xxx, with Honours." The fact will also be reflected in the consolidated grade card, along with the list of courses taken. If one specified course cannot be earned during the course of the programme, Honours will not be awarded. The individual course credits earned, however, will be reflected in the consolidated grade eardig.

The courses shall be grouped into maximum of 3 groups, each group representing a particular specialization in the branch. The students shall select only the courses from same group in all semesters. It means that the specialization is to be fixed by the student and cannot be changed subsequently. The internal evaluation, examination and grading shall be exactly as for other mandatory courses. The Honours courses shall be identified by H slot courses.

- (i) The curriculum/syllabus committee/BoS shall prepare syllabus for courses to be included in the curriculum from fourth to eight semesters for all branches. The honours courses shall be identified by H slot courses.
- (ii) Registration is permitted for Honours at the beginning of fourth semester. Total credits required is 182 (162 + 20 credits from value added courses).



- Out of the 20 Credits, 12 credits shall be earned by undergoing a minimum of three courses listed in the curriculum for honours, of which one course shall be a mini project based on the chosen area. The remaining 8 credits could be acquired (iii) through 2 MOOCs recommended by the Board of studies and approved by the Academic Council or through courses listed in the curriculum. The classes for Honours shall be conducted along with regular classes and no extra time shall be required for conducting the courses. The students should earn a grade of 'C' or better for all courses under honours.
- examination for the courses chosen for There won't be any supplementary (iv)
- On successful accumulation of credits at the end of the programme, "Bachelor of Technology in xxx, with Honours will be awarded if overall CGPA is greater than (v) or equal to 8.5, earned a grade of 'C' or better for all courses chosen for honours and without any history of 'F' Grade.
- The registration for honours program will commence from semester 4 and the all (vi) academic units offering honours in their discipline should prescribe set of such courses. The courses shall be grouped into maximum of 3 groups, each group representing a particular specialization in the branch. The students shall select only the courses from same group in all semesters. It means that the specialization is to be fixed by the student and cannot be changed subsequently. In any case, they should carry out a mini project based on the chosen area in S8. For example: Students who have registered for B.Tech Honours in ELECTRICAL & ELECTRONICS ENGINEERING can opt to study the courses listed below:

S e m es te r	GROUPI				GROUP II				GROUP III				
	Course No	Course Name	H O U R S		Course No.	Course Name E5td.	H OUR	R E	Course No	Course Name	H O U R S		
54	EET292	NETWORK ANALYSIS AND SYNTHESIS	4	4	EET 292	NETWORK ANALYSIS AND SYNTHESIS	4	4	EET 292	NETWORK ANALYSIS AND SYNTHESIS	4	4	
<b>S</b> 5	EET393	DIGITAL SIMULATION	4	4	EET 393	DIGITAL SIMULATION	4	4	EET 393	DIGITAL SIMULATION	4	4	
<b>S6</b>	EET394	GENERALISED MACHINE THEORY	4	4	EET 396	ANALYSIS OF . POWER ELECTRONIC CIRCUITS	4	4	EET 398	OPERATION AND CONTROL OF POWER SYSTEMS	4	4	
<b>S7</b>	EET495	OPERATION AND CONTROL OF GENERATORS	4	4	EET 497	DYNAMICS OF POWER CONVERTERS	4	4	EET 499	CONTROL AND DYNAMICS OF MICROGRIDS	4	4	
58	EED496	MINIPROJECT	4	4	EED 496	MINIPROJECT	4		EED 496	MINIPROJECT	4	4	
				7.0. J. S.				8	MANGALA	MINIPROJECT  MINIPROJECT  MINIPROJECT  ENGINE  MINIPROJECT  ENGINE  EN		176	

#### INDUCTION PROGRAM

There will be three weeks induction program for first semester students. It is a unique three-week immersion Foundation Programme designed especially for the fresher's which includes a wide range of activities right from workshops, lectures and seminars to sports tournaments, social work and much more. The programme is designed to mould students into well-rounded individuals, aware and sensitized to local and global conditions and foster their creativity, inculcate values and ethics, and help students to discover their passion. Foundation Programme also serves as a platform for the fresher's to interact with their batchmates and seniors and start working as a team with them. The program is structured around the following five themes:

The programme is designed keeping in mind the following objectives

- Values and Ethics: Focus on fostering a strong sense of ethical judgment and moral fortitude.
- Creativity: Provide channels to exhibit and develop individual creativity by expressing themselves through art, craft, music, singing, media, dramatics, and other creative activities.
- Leadership, Communication and Teamwork: Develop a culture of teamwork and group communication.
- Social Awareness: Nurture a deeper understanding of the local and global world and our place in at as concerned citizens of the world.
- Physical Activities & Sports: Engage students in sports and physical activity to ensure healthy physical and mental growth.



### CURRICULUM I TO VIII: B. TECH MECHANICAL ENGINEERING

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

belov	v. Category	Code	Credit
SI. No	Humanities and Social Sciences including Management	НМС	8
1	courses .	—BSC	26
2	Basic Science courses	ESC	22
3	Engineering Science Courses	PCC	76
4	Program Core Courses	PEC	15
5	Program Elective Courses	OEC	3
6	Open Elective Courses •	PWS	10
7	Project work and Seminar		
8	Mandatory Non-credit Courses (P/F) with grade	MNC	
9	Mandatory Student Activities (P/F)	MSA	2
9	Total Mandatory Credits	16	52
	Value Added Course (Optional)	VAC	20

#### Estd.

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:

below:		The same of				6	7	8	Total
Sem	1	2	3	20	14				
Credits	17	21	22	22 -	23	23	15	17	160
Activity Points		50				Andrew Prince	50		
Credits for Activity				2					2
G.Total									162

MANGALAM COL LEGE OF ENGINEERING Ettumanoor

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,, Design Engineering, Materials Engineering etc.

Humanities and Social Sciences including Management courses: English, Humanities, Professional Communication, Management, Finance & Accounting, Life Skills, Professional Communication, Economics etc.

Mandatory non-credit courses: Sustainable Engineering, Constitution of India/Essence of Indian Knowledge Tradition, Industrial Safety

Course Code and Course Number

Each course is denoted by a unique code consisting of three alphabets followed by three numerals like ECL 201. 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 course

Code	Description
T	Theory based courses (other the lecture hours, there
L	Laboratory based courses (where performance is a laboratory based courses (where performance is a laboratory based course)
N	of practical or laboratory work with LTP structures like 0-0-3, 1-0-3, 0-1-3 etc.)
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:

PRINCIPAL ENGINEERING

#### 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 A	Course S Prefix N	L. O	Department	Course Prefix
1	Aeronautical Engg	, AO 2	0, 1	ood Technology	FT
2	Applied Electronics & Instrumentation	AE L	21	Humanities	HU
3	Artificial Intelligence	Al 2	22	Industrial Engg	IE
4	Artificial Intelligence & Data Science	AD	23	Information Technology	IT
5	Automobile <sup>9</sup>	AU	24	Instrumentation & Control	IC
6	Biomedical Engg	BM	25	Mandatory Courses	МС
7	Biotechnology	ВТ	26	Mathematics	MA
8	Chemical Engg	СН	27	Mechanical Engg	ME
9	Chemistry	CY	28	Mechatronics	MR
10	Civil Engg	CE	29	Metallurgy	MT
11	Computer Science	CS	30	Mechanical (Auto)	MU
12	Computer Science (Artificial Intelligence)	CA E5	[]	Mechanical (Prod)	МР
13	Computer Science (Artificial	СМ	32	Naval & Ship Building	SB
1-	4 Computer Science (Data Science)	CD	33	Physics	PH
1	5 Computer Science	CC 21	34	Polymer Engg	PC
1	Cyber Security  16 Electronics & Biomedical	ЕВ	35	Production Engg	PE
	17 Electronics & Communication	EC	36	Robotics and Automation	R.A
	18 Electrical and Computer Engineering	EO	37	Safety & Fire Engg	FS
	19 Electrical & Electronics	EE			

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#### SEMESTER I

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	MAT 101	LINEAR ALGEBRA AND CALCULUS	3-1-0	4	4
В	PHT 110	ENGINEERING PHYSICS B	3-1-0	A.	4
1/2	CY <b>T 100</b> →	ENGINEERING CHEMISTRY	3-10	A	4
C 1/2	EST 100	ENGINEERING MECHANICS	2-1-0	3	3
mis/030	EST 110	ENGINEERING GRAPHICS	2-0-2	4	3
D 1/2	EST 120	BASICS OF CIVIL & MECHANICAL ENGINEERING	4-0-0	4	4
	EST 130	BASICS OF ELECTRICAL & ELECTRONICS ENGINEERING	4-0-0	4	4
E	HUN 101	LIFE SKILLS	2-0-2	4	
S 1/2	PHL 120	ENGINEERING PHYSICS LAB	0-0-2	2	1
	CYL 120	ENGINEERING CHEMISTRY LAB	0-0-2	2	1
T 1/2	ESL 120	CIVIL & MECHANICAL WORKSHOP	0-0-2	2	1
	ESL 130	ELECTRICAL & ELECTRONICS WORKSHOP	0-0-2	2	1
		TOTAL	Na.	23/24 *	17

<sup>\*</sup>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

WANGALAN COLLEGE OF ENCONFERNING

#### SEMESTER II

JES I Er		COURSES	L-T-P	HOURS	CREDIT
LOT	COURSE NO.		3-1-0	<b>.</b>	4
Α	MAT 102	VECTOR CALCULUS, DIFFERENTIAL FEQUATIONS AND TRANSFORMS FOR ENGINEERING PHYSICS B	A 1 3-10	AN	4
B 1/2	PHT 110 CYT 100 →	ENGINEERING CHEMISTRY	3 1 0	A	4
С	EST 100	ENGINEERING MECHANICS	2-1-0	3	3
1/2	EST 110	ENGINEERING GRAPHICS	2-0-2	4	3
D	EST 120	BASICS OF CIVIL & MECHANICAL	4-0-0	4	4
1/2	EST 130	BASICS OF ELECTRICAL & ELECTRONICS ENGINEERING	4-0-0	4	4
E	HUN 102	PROFESSIONAL COMMUNICATION	2-0-2	4	
F	EST 102	PROGRAMMING IN C	2-1-2	5	4
S 1/2	PHL 120	ENGINEERING PHYSICS LAB	0-0-2	2	1
1/2	CYL 120	ENGINEERING CHEMISTRY LAB	0-0-2	f	1
T	ESL 120	CIVÎL & MECHANICAL WORKSHOP	0-0-2		1
1/2	ESL 130	ELECTRICAL & ELECTRONICS WORKSHOP F510	0-0-2		1
		TOTAL		28/2	9 21

#### NOTE:

- 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 B in SI and Engineering Chemistry in S2 & vice
   versa. Students opting for 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 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 SI and Engineering Graphics in S2 & vice versa.



#### SEMESTER IV

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREI
Α	MAT202	PROBABILITY, STATISTICS AND NUMERICAL METHODS	3-1-0	4	4
В	MET202	TABLULE	3-1-0	4	4
С	MET204	MANUFACTURING PROCESS	3-1-0	14	4
D	MET206	ELUID MACHINERY	3-1-0	4	4
E	EST200	DESIGN AND ENGINEERING	2-0-0	2	2
1/2	HUT200	PROFESSIONAL ETHICS	2-0-0	2	2
F	MCN202	CONSTITUTION OF INDIA	2-0-0	2	-
S	MEL202	FM & HM LAB	0-0-3	3	2
T	MEL204	MACHINE TOOLS LAB-I	0-0-3	3	2
/M/ H	VAC	REMEDIAL/MINOR/HONORS COURSE	3-1-0	4*	4
		TOTAL		26/30	22/26

#### NOTE:

- Design & Engineering and Professional Tithics shall be offered in both S3 and S4.
   Institutions can advise students belonging to about 50% of the number of branches in the Institution to opt for Design & Engineering in S3 and Professional Ethics in S4 & vice versa.
- 2. \*All Institutions should keep 4 hours exclusively for Remedial class/Minor course (Thursdays from 3 to 5 PM and Fridays from 2 to 4 PM). If a student does not opt for minor programme, he/she can be given remedial class.

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#### SEMESTER V

SLOT	COURSE	COURSES	L-T-P	HOURS	CREC
	NO.			200 E	<u> </u>
Α	MET301	MECHANICS OF MACHINERY	A 3-1-0 A	14	4
В	MET303	THERMAL ENGINEERING	3-1-0	4	4
С	MET305	INDUSTRIAL & SYSTEMS ENGINEERING	J 3-10./	4.	4
D	MET307	MACHINE TOOLS AND METROLOGY	3-1-0	4	4
E 1/2	нит300	INDUSTRIAL ECONOMICS AND FOREIGN TRADE	3-0-0	3	3
	нит310	MANAGEMENT FOR ENGINEERS	3-0-0	3	3
F	MCN301	DISASTER MANAGEMENT	2-0-0	2	2 <del>44</del> 2
S	MEL331	MACHINE TOOLS LAB-II	0-0-3	3	2
T	MEL333	THERMAL ENGINEERING LAB-I	0-0-3	3	2
/м/н	VAC	REMEDIAL/MINOR/HONORS COURSE	3-1-0	4*	4
		TOTAL		27/31	23/27

#### NOTE:

- 1. Industrial Economics & Foreign Trade and Management for Engineers shall be offered in both S5 and S6. Institutions can advise students belonging to about 50% of the number of branches in the Institution to opt for Industrial Economics & Foreign Trade in S5 and Management for Engineers in S6 and vice versa.
- \*All Institutions should keep 4 hours exclusively for Remedial class/Minor/Honours course (Tuesdays from 3 to 5 PM and Wednesdays from 3 to 5 PM). If a student does not opt for minor/honours programme, he/she can be given remedial class.

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#### SEMESTER VI

LOT	COURSE NO.	COURSES	L-T-P	HOURS	CRED
	COOLING	TO MASS TRANSFER	3-1-0	4	4
Α	MET302	HEAT & MASS TRANSFER			
В	MET304)	DYNAMICS AND DESIGN OF	^3-1-0	4M	4
С	MET306	ADVANCED MANUFACTURING ENGINEERING	3-1-0	74	4
D	METXXX	PROGRAMIELECTIVEL D	2-1-0/	3	3
E	HUT300	INDUSTRIAL ECONOMICS AND FOREIGN TRADE	3-0-0	3	3
<i>Y</i> <sub>2</sub>	HUT310	MANAGEMENT FOR ENGINEERS	3-0-0	3	3
F	MET308	COMPREHENSIVE COURSE WORK	1-0-0	1	1
S	MEL332	COMPUTER AIDED DESIGN & ANALYSIS LAB	0-0-3	3	2
Т	MEL334	THERMAL ENGINEERING LAB-II	0-0-3	3	2
R/M/ H	VAC	REMEDIAL/MINOR/HONOURS COURSE	3-1-0	4*	4
	777	TOTAL		25/29	23/27

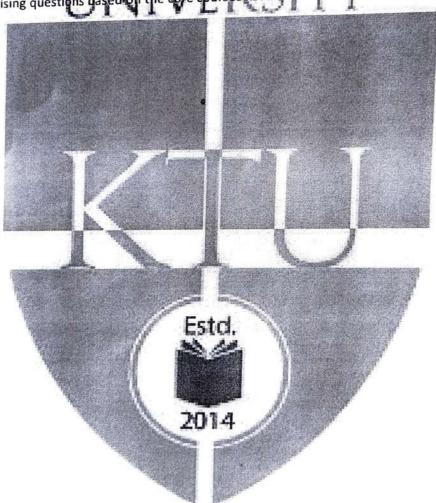
#### PROGRAM ELECTIVE I

SLOT	COURSE NO.	COURSES LO.			
		COURSES	L-T-P	HOURS	CREDIT
	MET312	NONDESTRUCTIVE TESTING	2 4 2		jos -
	MET322	COMPUTATIONAL FLUID DYNAMICS	2-1-0		
	MET332	ADVANCED MECHANICS OF SOLIDS	2-1-0		
D	MET342	IC ENGINE COMBUSTION AND T	2-1-0		7
	MET352	AUTOMOBILE ENGINEERING		3	3
OTE:	MET362	PRODUCT DESIGN AND DEVELOPMENT	2-1-0		
	MET372	ADVANCED METAL JOINING TECHNIQUES	2-1-0	II Ki	

 Industrial Economics & Foreign Trade and Management for Engineers shall be offered in both S5 and S6. Institutions can advise students belonging to about 50% of the number of branches in the Institution to opt for Industrial Economics & Foreign Trade in S5 and Management for Engineers in S6 and vice versa.

PRINCIPAL PRINCI

- \*\*All Institutions should keep 4 hours exclusively for Remedial class/Minor/Honours course (Tuesdays from 2 to 4 PM and Wednesdays from 2 to 4 PM). If a student does not opt for minor/honors programme, he/she can be given remedial class.
- 3. Comprehensive Course Work: The comprehensive course work in the sixth semester of study shall have a written test of 50 marks. The written examination will be of objective type similar to the GATE examination and will be conducted online by the University. Syllabus for comprehensive examination shall be prepared by the respective BoS choosing any 5 core courses studied from semester 3 to 5. The pass minimum for this course is 25. The course should be mapped with a faculty and classes shall be arranged for practising questions based on the core courses listed in the curriculum.



MANGALAM COLLEGE OF ENGINEERING

#### SEMESTER VII

		COURSES	L-T-P	HOURS	CREDIT
LOT	COURSE NO.	COOKSES	1		-
Α	MET401	DESIGN OF MACHINE ELEMENTS	2-1-0	3	3
В	METXXX	PROGRAM ELECTIVE II	2-1-0	3	3
С	METXXX	OPEN ELECTIVE	2-1-0	V <sub>3</sub>	3
D	MCN401	INDUSTRIAL SAFETY ENGINEERING	2.1-0.	13	
S	MEL411	MECHANICAL ENGINEERING LAB	0-0-3	3	2
τ	MEQ413	SEMINAR	0-0-3	3	2
U	MED415	PROJECT PHASE I	0-0-6	6	2
R/M/ H	VAC	REMEDIAL/MINOR/HONORS COURSE	3-1-0	4*	4
		TOTAL		24/28	15/19

#### PROGRAM ELECTIVE II

COURSE NO.	COURSES		A TOPE	
	<b>建筑</b>	L-I-P	HOURS	CREDIT
MET413	ADVANCED METHODS IN NONDESTRUCTIVE TESTING	2-1-0		1
MET423	OPTIMIZATION TECHNIQUES AND	2-1-0	3	2
MET433	A STATE OF THE PARTY OF THE PAR	210		3
MET443	TOTAL PROPERTY OF THE PROPERTY	E Debt o		
MET453		Main Tooley Bally Service		
MET463	OPERATIONS MANAGEMENT			Sur T
MET473	AIR CONDITIONING AND	CONTRACTOR OF THE PROPERTY OF		
	REFRIGERATION	2-1-0		
	MET413  MET423  MET433  MET443  MET453  MET463	MET413 ADVANCED METHODS IN NONDESTRUCTIVE TESTING  MET423 OPTIMIZATION TECHNIQUES AND APPLICATIONS  MET433 FINITE ELEMENT METHOD  MET443 AEROSPACE ENGINEERING  MET453 HYBRID AND ELECTRIC VEHICLES  MET463 OPERATIONS MANAGEMENT  MET473 AIR CONDITIONING AND	MET413 ADVANCED METHODS-IN NONDESTRUCTIVE TESTING  MET423 OPTIMIZATION TECHNIQUES AND APPLICATIONS  MET433 FINITE ELEMENT METHOD  MET443 AEROSPACE ENGINEERING  MET453 HYBRID AND FLECTRIC VEHICLES  MET463 OPERATIONS MANAGEMENT  MET473 AIR CONDITIONING AND	MET413 ADVANCED METHODS-IN NONDESTRUCTIVE TESTING  MET423 OPTIMIZATION TECHNIQUES AND APPLICATIONS  MET433 FINITE ELEMENT METHOD MET443 AEROSPACE ENGINEERING MET453 HYBRID AND ELECTRIC VEHICLES MET463 OPERATIONS MANAGEMENT MET473 AIR CONDITIONING AND

#### **OPEN ELECTIVE**

The open elective is offered in semester 7. Each program should specify the courses (maximum 5) they would like to offer as electives for other programs The courses listed below are offered by the Department of MECHANICAL ENGINEERING for students of other undergraduate branches offered in the college under KTU.

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	MET425	QUANTITATIVE TECHNIQUES FOR 2-1-0 3
C	MET435 🛶	AUTOMOTIVE TECHNOLOGY 2-10
	MET445	RENEWABLE ENERGY ENGINEERING 2-10
	MET455	QUALITY ENGINEERING AND 2-1-0 MANAGEMENT 2-1-0

#### NOTE:

- 1. \*All Institutions should keep 4 hours exclusively for Remedial class/Minor/Honors course (Mondays from 10 to 12 and Wednesdays from 10 to 12 Noon). If a student does not opt for minor/honours programme, he/she can be given remedial class.
- 2. Seminar: To encourage and motivate the students to read and collect recent and reliable information from their area of interest confined to the relevant discipline from technical publications including peer reviewed journals, conference, books, project reports etc., prepare a report based on a central theme and present it before a peer audience. Each student shall present the seminar for about 20 minutes duration on the selected topic. The report and the presentation shall be evaluated by a team of internal members comprising three senior faculty members based on style of presentation, technical content, adequacy of references, depth of knowledge and overall quality of the report.

Total marks: 100, only CIE, minimum required to pass 50

Attendance

Guide

- 20 Technical Content of the Report 40 Presentation
  - 3. Project Phase I: A Project topic must be selected either from research literature or the students themselves may propose suitable topics in consultation with their guides. The object of Project Work I is to enable the student to take up investigative study in the broad field of Mechanical Engineering, either fully theoretical/practical or involving both theoretical and practical work to be assigned by the Department on a group of three/four students, under the guidance of a Supervisor. This is expected to provide a good initiation for the student(s) in R&D work. The assignment to normally include:
    - Survey and study of published literature on the assigned topic;
    - Preparing an Action Plan for conducting the investigation, including team work;
    - > Working out a preliminary Approach to the Problem relating to the assigned topic;
    - Block level design documentation
    - Conducting preliminary Analysis/ Modelling/ Simulation/ Experiment/ Design/

reasionity;

> Preparing a Written Report on the Study conducted for presentation to the

; 30

> Final Seminar, as oral Presentation before the evaluation committee.

Total marks: 100, only CIE, minimum required to pass 50

Interim evaluation by the evaluation com-

**Final Seminar** 

The report evaluated by the evaluation

y member, Project doordinator and The evaluation committee compr project supervisor

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#### **SEMESTER VIII**

LOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDI
Α	MET402	MECHATRONICS	2-1-0	3	3
В	метххх	PROGRAM ELECTIVE III	2-1-0	ΔįV	3
С	METXXX	PROGRAM ELECTIVE IV	2-1-0	"点1	3
D	METXXX	PROGRAM-ELECTIVE V	2-1-0	3 3	3
E	MET404	COMPREHENSIVE VIVA VOCE	1-0-0	1	1
U	MED416	PROJECT PHASE II	0-0-12	12	4
R/M/ H	VAC	REMEDIAL/MINOR/HONORS COURSE	3-1-0	4*	4
		TOTAL		25/28	17/21

#### PROGRAM ELECTIVE III

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
	MET414	QUALITY MANAGEMENT	2-1-0		5
	MET424	DECISIONS WITH METAHEURISTICS	2-1-0		
	MET434	PRESSURE VESSEL AND PIPING DESIGN	2-1-0		
В	MET444	DATA ANALYTICS FOR ENGINEERS	2-1-0	3	3
	MET454	INDUSTRIAL TRIBOLOGY	2-1-0		
	MET464	MICRO AND NANO MANUFACTURING	2-1-0		
	MET474	HEATING AND VENTILATION SYSTEMS	2-1-0		

#### PROGRAM ELECTIVE IV

SLOT	COURSE NO.	courses 1.4	L-T-P	HOURS	CREDIT
	MET 416	COMPOSITE MATERIALS	2-1-0		
	MET 426	ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING	2-1-0		
3	MET 436	ACOUSTICS AND NOISE CONTROL	2-1-0	3	3
	MET 446	HEAT TRANSFER EQUIPMENT DESIGN	2-1-0		
С	MET 456	ROBOTICS AND AUTOMATION	2-1-0		
	MET 466	TECHNOLOGY MANAGEMENT	2-1-0		
	MET 476	CRYOGENIC ENGINEERING	2-1-0		

MANGALAM COLLEGE OF ENGINEERING

SLOT	COURSE NO	I ABIOURSES L K	ALT-P	HOURS	CREDI
	MET 418	REMABILITYENGINEERING	2-1-0	- A T	
	MET 428	INDUSTRIAL INTERNET OF THINGS	T 2-1-0	$\mathcal{H}$	
	MET438	FRACTURE MECHANICS	2-1-0		
D	MET 448	GASTURBINES AND JET PROPULSION	2-1-0	3	3
	MET 458	ADVANCED ENERGY ENGINEERING 197	2-1-0		
	MET 468	ADDITIVE MANUFACTURING	2-1-0	<b>建设 通</b>	
-1/4	MET 478	POWER PLANT ENGINEERING	2-1-0		

#### NOTE

- \*All Institutions should keep 4 hours exclusively for Remedial class/Minor/Honours course (Mondays from 10 to 12 and Wednesdays from 10 to 12). If a student does not opt for minor/honors programme, he/she can be given remedial class.
- 2. Comprehensive Course Viva: The comprehensive course viva in the eighth semester of study shall have a viva voce for 50 marks. The viva voce shall be conducted based on the syllabus mentioned for comprehensive course work in the sixth will be conducted by the same three member committee assigned for final project phase II evaluation towards the end of the semester. The pass minimum for this course is 25. The course should be mapped with a faculty and classes shall be arranged for practising questions based on the core courses listed in the curriculum. The mark will be treated as internal and should be uploaded along with internal marks of other courses.
- 3. Project Phase II: The object of Project Work II & Dissertation is to enable the student to extend further the investigative study taken up in Project 1, either fully theoretical/practical or involving both theoretical and practical work, under the guidance of a Supervisor from the Department alone or jointly with a Supervisor drawn from R&D laboratory/Industry. This is expected to provide a good training for the student(s) in R&D work and technical leadership. The assignment to normally include:
  - In depth study of the topic assigned in the light of the Report prepared under Phasel;
  - Review and finalization of the Approach to the Problem relating to the assigned topic;
  - Detailed Analysis/ Modelling/ Simulation/ Design/ Problem Solving/ Experiment as needed;
  - Final development of product/process, testing, results, conclusions and future directions;
  - > Preparing a paper for Conference presentation/Publication in Journals, if possible;

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: 30

- > Preparing a Dissertation in the standard format for being evaluated by the Department;
- Final Presentation before a Committee

Total marks: 150, only CIE, minimum required to pass 75

Guide

Interim evaluation, 2 times in the semester by the evaluation committee : 50

Quality of the report evaluated by the above committee

Final evaluation by a three member committee

Project coordinator, expert from Industry/research (The final evaluation committee comprises, department. The same committee will conduct Institute and a senior faculty from a sister comprehensive course viva for 50 mark

#### MINOR

Minor is an additional credential a student may earn if s/he does 20 credits worth of additional learning in a discipline other than her/his major discipline of B.Tech. degree. The objective is to permit a student to customize their Engineering degree to suit their specific interests. Upon completion of an Engineering Minor, a student will be better equipped to perform interdisciplinary research and will be better employable. Engineering Minors allow a student to gain interdisciplinary experience and exposure to concepts and perspectives that may not be a part of their major degree programs.

The academic units offering minors in their discipline will prescribe the set of courses and/or other activities like projects necessary for earning a minor in that discipline. A specialist basket of 3-6 courses is identified for each Minor. Each basket may rest on one or more foundation courses. A basket may have sequences within it, i.e., advanced courses may rest on basic courses in the basket. S/he accumulates credits by registering for the required courses, and if the requirements for a particular minor are met within the time limit for the course, the minor will be awarded. This will be mentioned in the Degree Certificate as Bachelor of Technology in xxx with Minor in yyy". The fact will also be reflected in the consolidated grade card, along with the list of courses taken. If one specified course cannot be earned during the course of the programme, that minor will not be awarded. The individual course credits earned, however, will be reflected in the consolidated

(i) The curriculum/syllabus committee/BoS shall prepare syllabus for courses to be included in the curriculum from third to eight semesters for all branches. The minor courses shall be identified by M slot courses.

(ii) Registration is permitted for Minor at the beginning of third semester. Total credits required is 182 (162 + 20 credits from value added courses)

(iii) Out of the 20 Credits, 12 credits shall be earned by undergoing a minimum of three courses listed in the curriculum for minor, of which one course shall be a mini project based on the chosen area. They can do miniproject either in S7 or in S8. The remaining 8 credits could be acquired by undergoing 2 MOOCs recommended by the Board of studies and approved by the Academic Council or through courses listed in the curriculum. The classes for Minor shall be conducted along with regular classes and no extra time shall be required for conducting the courses.

MANGALAM COLLEGE OF ENGINEERING

(iv) There won't be any supplementary examination for the courses chosen for Minor. (v) On completion of the program, "Bachelor of Technology in xxx with Minor in yyy" will be

(vi) The registration for minor program will commence from semester 3 and the all academic units offering minors in their discipline should prescribe set of such courses. The courses shall be grouped into maximum of 3 baskets. The basket of courses may have sequences within it, i.e., advanced courses may rest on basic courses in the basket. Reshuffling of courses between various baskets will not be allowed. In any case they should carry out a mini project based on the chosen area in S7 or S8. Students who have registered for B. Tech Minor in MECHANICAL ENGINEERING Branch can opt to study the cour

s		BASKET I	<b>L</b> _		MI	BASKET II	1	Į.	1	BASKET III		
e m e st er	Course No.	Course Name	H O U R S	C R E D I	Course No.	Course Name	H O U R S	CREDIT	Course No.	Course Name	H O U R S	F
\$3	MET281	MECHANICS OF MATERIALS	4	4	MET283	FLUID MECHANICS & MACHINERY	4	4	MET285	MATERIAL SCIENCE & TECHNOLOGY	4	4
S4	MET282	THEORY OF MACHINES	4	4	MET284	THERMODYNAMICS	4	4	MET286	MANUFACTURIN G TECHNOLOGY	4	4
S5	MET381	DYNAMICS OF MACHINES	4	4	MET383	THERMAL SCIENCE AND ENGINEERING	4	4	MET385	MACHINE TOOLS	4	4
S6	MET382	MACHINE DESIGN	4	4	MET384	HEAT TRANSFER	4	4	MET386	ENGINEERING INDUSTRIAL	4	4
57	MED481	MINIPROJECT	4	4	MED481	MINIPROJECT		lan.		ENGINEERING		
58	MED482	MINIPROJECT	4	4	MED482	MINIPROJECT	4	4	MED481	MINIPROJECT	4	4
		To the state of th				Esto	14	4	MED482	MINIPROJECT	4	4

#### HONOURS

Honours is an additional credential a student may earn if s/he opts for the extra 20 credits needed for this in her/his own discipline. Honours is not indicative of class. KTU is providing this option for academically extra brilliant students to acquire Honours. Honours is intended for a student to gain expertise/specialise in an area inside his/her 1994 A Tech discipline and to enrich knowledge in emerging/advanced areas in the branch of engineering concerned. It is particularly suited for students aiming to pursue higher studies. Upon completion of Honours, a student will be better equipped to perform research in her/his branch of engineering. On successful accumulation of credits at the end of the programme, this will be mentioned in the Degree Certificate as "Bachelor of Technology in xxx, with Honours." The fact will also be reflected in the consolidated grade card, along with the list of courses taken. If one specified course cannot be earned during the course of the programme, Honours will not be awarded. The individual course credits earned, however, will

The courses shall be grouped into maximum of 3 groups, each group representing a particular specialization in the branch. The students shall select only the courses from same group in all

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semesters. It means that the specialization is to be fixed by the student and cannot be changed subsequently. The internal evaluation, examination and grading shall be exactly as for other mandatory courses. The Honours courses shall be identified by H slot courses.

- (i) The curriculum/syllabus committee/BOS shall prepare syllabus for courses to be included in the curriculum from fourth to eight semesters for all branches. The honours courses shall be identified by H slot courses.
- (ii) Registration is permitted for Honours at the beginning of fourth-semester. Total credits required is 182 (162 + 20 credits from value added courses).
- (iii) Out of the 20 Credits, 12 credits shall be earned by undergoing a minimum of three courses listed in the curriculum for honours, of which one course shall be a mini project based on the chosen area. The remaining 8 credits could be acquired by undergoing 2 MOOCs recommended by the Board of studies and approved by the Academic Council or through courses listed in the curriculum. The classes for Honours shall be conducted along with regular classes and no extra time shall be required for conducting the courses. The students should earn a grade of 'C' or better for all courses under honours.
- (iv) There won't be any supplementary examination for the courses chosen for honours.
- (v) On successful accumulation of credits at the end of the programme, "Bachelor of Technology in xxx, with Honours" will be awarded if overall CGPA is greater than or equal to 8.5, earned a grade of 'C' or better for all courses chosen for honours and without any history of 'F' Grade.
- (vi) The registration for honours program will commence from semester 4 and the all academic units offering honours in their discipline should prescribe set of such courses. The courses shall be grouped into maximum of 3 groups, each group representing a particular specialization in the branch. The students shall select only the courses from same group in all semesters. It means that the specialization is to be fixed by the student and cannot be changed subsequently. In any case, they should carry out a mini project based on the chosen area in S8. Students who have registered for B.Tech Honours in MECHANICAL ENGINEERING can opt to study the courses listed below.

cr		(S. 67) (S. 67)		Selection Services			-					_
SE ME		GROUP I				GROUP II				GROUP III		
STE R	_		1			CU14					Н	
	Course	Course	Н	C	Course	Course	H	C	Course	Course Name	0	R
	. No.	Name	0	R	No.	Name	0	R	No.		U	E
			U	E			U	E			R	D
			R	D		[ N.62*"	R	D			S	1
			S	1		1.00	S	1				T
				T				T				
54	MET292	CONTINUUM MECHANICS	4	4	MET294	ADVANCED MECHANICS OF FLUIDS	4	4	MET296	MATERIALS IN MANUFACTURING	4	4
S5	MET393	EXPERIMENT AL STRESS	4	4	MET395	ADVANCED THERMODYNA	4	4	MET397	FLUID POWER	4	4

MANGALAN COLLEGE OF ENGINEERING

#### MECHANICAL ENGINEERING

	1	ANALYSIS	Γ	T		MICS				AUTOMATION		
\$6	MET394	ADVANCED DESIGN SYNTHESIS	4	4	MET396	COMPRESSIBL E FLUID FLOW	4	4	MET398	ADVANCED NUMERICAL CONTROLLED MACHINING	4	4
57	MET495	ADVANCED THEORY OF VIBRATIONS	4	4	мет497 В <b>Д</b>	COMPUTATIO NAL METHODS IN FLUID ELOW & HEAT	4	4	мет499 [_Д	PRECISION MACHINING	4	4
S8	MED496	MINIPROJEC	4	4	MED496	TRANSFER MINIPROJECT	4	4	MED496	MINIPROJECT	4	4

#### INDUCTION PROGRAM

There will be three weeks induction program for first semester students. It is a unique three-week immersion Foundation Programme designed especially for the fresher's which includes a wide range of activities right from workshops, lectures and seminars to sports tournaments, social work and much more. The programme is designed to mould students into well-rounded individuals, aware and sensitized to local and global conditions and foster their creativity, inculcate values and ethics, and help students to discover their passion. Foundation Programme also serves as a platform for the fresher's to interact with their batchmates and seniors and start working as a team with them. The program is structured around the following five themes:

The programme is designed keeping in mind the following objectives:

- Values and Ethics: Focus on fostering a strong sense of ethical judgment and moral fortitude.
- Creativity: Provide channels to exhibit and develop individual creativity by expressing themselves through art, craft, music, singing, media, dramatics, and other creative activities.
- Leadership, Communication and Teamwork Develop a culture of teamwork and group communication.
- Social Awareness: Nurture a deeper understanding of the local and global world and our
  place in at as concerned citizens of the world.

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#### APJ Abdul Kalam Technological University

Cluster 4: Kottayam

# M. Tech Program in Electronics and Communication Engineering (Communication Engineering)

Scheme of Instruction & Syllabus: 2015 Admissions



Compiled By

Rajiv Gandhi Institute of Technology, Kottayam

July 2015

MANGALAM COLLECTION



#### **APJ Abdul Kalam Technological University**

#### Cluster 4: Kottayam

#### M. Tech Program Electronics and Communication Engineering with specialization in Communication Engineering

**Credit requirements** 

:- 66 credits (21+19+14+12)

**Normal Duration** 

:- Regular: 4 semesters; External Registration: 6 semesters

Maximum duration

:- Regular: 6 semesters; External registration : 7 semesters

Courses: Core Courses :- Either 4 or 3 credit courses; Elective courses: All of 3 credits

**ELIGIBILITY:** 

B. Tech / B.E in Electronics and Communication engineering, or allied

branches with strong focus in electronics engineering.

#### **SEMESTER-1**

Exam Slot	Course Code	ourse Code Name	L-T-P	Internal Marks	End Se Exar	Credits (22)	
				IVIAIKS	Marks	hrs	(22)
Α	04 EC 6301	Analytical Foundation for Communication Engineering	4-0-0	40	60	3	4
В	04 EC 6303	Advanced Digital Communication Techniques	3-0-0	40	60	3	3
С	04 EC 6305	Algebraic Coding Theory	3-0-0	40	60	3	3
D	04 EC 6307	High Frequency Circuits Design	3-0-0	40	60	3	3
Ε	04 EC 63XX	Elective1	3-0-0	40	60	3	3
	04 GN 6001	Research Methodology	0-2-0	100	0	0	2
	04 EC 6391	Seminar	0-0-2	100	0	0	2
	04 EC 6393	Communication Engineering Lab I	0-0-2	100	0	0	1
		TOTAL	22				21

2 APJ Abdul Kalam Technological University | Cluster 4 | M. Tech in Communications Engineering



#### **SEMESTER-2**

Exam Slot	Course No:	Name	L- T - P	Internal Marks	End Se Exan	Credits	
0.00					Marks	hrs	(19)
A	04 EC 6302	Advanced Communication Networks	4-0-0	40	60	3	4
В	04 EC 6304	Multicarrier and MIMO Communication Systems	3-0-0	40	60	3	3
С	04 EC 6306	Adaptive Signal Processing Techniques	3-0-0	40	60	3	3
D	04 EC 63XX	Elective-2	3-0-0	40	60	3	3
E	04 EC 63XX	Elective-3	3-0-0	40	60	3	3
	04 EC 6392	Mini Project	0-0-4	100	0	0	2
	04 EC 6394	Communication Engineering Lab 2	0-0-2	100	0	0	1
			22				19,

#### **SUMMER BREAK**

Exam Slot	Course No:	Name	L- T - P	Internal Marks	End Se Exar Marks	Credits (0)
	04 EC 7390	Industrial Training	0-0-4			Pass/ Fail

#### **SEMESTER-3**

Exam	Course No:	No: Name		Internal Marks	End Se Exan	Credits	
Slot				IVIdIKS	Marks	hrs	(14)
Α	04 EC 73XX	Elective 4	3-0-0	40	60	3	3
В	04 EC 73XX	Elective 5	3-0-0	40	60	3	3
	04 EC 7391	Seminar	0-0-2	100	0	0	2
	04 EC 7393	Project (Phase 1)	0-0-12	50	0	0	6

3 APJ Abdul Kalam Technological University | Cluster 4 | M.Tech in Communications Engineering

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#### **SEMESTER-4**

Exam Slot	Course No:	Name	L- T - P	Internal Marks	External Evaluation Marks	Credits (12)
	04 EC 7394	Project (Phase 2)	0-0-21	70	30	12

#### **ELECTIVE LIST**

ELECTIVE GROUP	EXAM SLOT	Course No:	Name
	E	04 EC 6309	Advanced Optical Communication
1	E	04 EC 6311	Signal Processing for Speech and Image
•	E	04 EC 6313	Real Time Embedded System Design
	E	04 EC 6315	Antenna Theory and Design
	D	04 EC 6308	Advanced Wireless & Mobile Communication system
2	D	04 EC 6312	Modern Satellite Systems
	D	04 EC 6314	RF Microelectronics
	D	04 EC 6316	Multimedia compression techniques
	E	04 EC 6318	Electromagnetic Compatibility and Interference
3	E	04 EC 6322	Estimation and Detection
	Ε .	04 EC 6324	Neural Networks and applications
	E	04 EC 6326	Computational Electromagnetic
	Α	04 EC 7301	Wireless ADHOC and Sensor Networks
4	Α	04 EC 7303	Communication Switching & Multiplexing
" [	Α	04 EC 7305	Cloud Computing
	Α	04 EC 7307	Microwave Integrated Circuits Design
	В	04 EC 7309	Adaptive and smart antennas
5	В .	04 EC 7311	Communication Network Security
	В	04 EC 7313	Computer Vision
	В	04 EC 7315	Modern trends in communications

4 APJ Abdul Kalam Technological University | Cluster 4 | M.Tech in Communication

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APJ Abdul Kalam Technological University

Cluster 4: Kottayam

## M. Tech Program in Computer Science & Engineering

Scheme of Instruction and Syllabus: 2015 Admissions



Compiled By

Rajiv Gandhi Institute of Technology, Kottayam

July 2015

PRINCIPAL PRINCIPAL OF ENGINEERING



#### APJ Abdul Kalam Technological University

#### (Kottayam Cluster)

#### M. Tech Program in Computer Science and Engineering

#### Scheme of Instruction

Credit requirements

: 66 credits (22+18+14+12)

**Normal Duration** 

: Regular: 4 semesters; External Registration: 6 semesters

Maximum duration

: Regular: 6 semesters; External Registration: 7 semesters

Courses: Core Courses: Either 4 or 3 credit courses; Elective courses: All of 3 credits

Allotment of credits and examination scheme:-

Semester 1 (Credits: 22)

Exam Slot	Course No:	urse No: Name	L-T-P	Internal Marks		End Semester Exam	
					Marks	Dura tion (hrs)	
Α	04 CS 6101	Computational Intelligence	3-1-0	40	60	3	4
В	04 CS 6103	Advanced Data Structures and Algorithms	3-1-0	40	60	3	4
С	04 CS 6105	Computer Security and Applied Cryptography	3-0-0	40	60	3	3
D	04 CS 6107	Modern Computer Networks	3-0-0	40	60	3	3
E	04 CS 6XXX*	Elective - I	3-0-0	40	60	3	3
	04 GN 6001	Research Methodology	0-2-0	100	0	0	2
	04 CS 6191	Seminar - I	0-0-2	100	0	0	2
	04 CS 6193	Network Simulation Lab	0-0-2	100	0	0	1
		Total	23				22

\*See List of Electives-I for slot E

#### List of Elective - I Courses

Exam Slot	Course No.	Course Name
E	04 CS 6109	Web Services
Ε	04 CS 6111	Object Oriented Software Engineering
Ε	04 CS 6113	Logic in Computer Science
E	04 CS 6115	Social Network Analytics

2 APJ Abdul Kalam Technological University | Cluster 4 | M. Tech in Computer Science &



#### M. Tech Program in Computer Science and Engineering

#### Semester 2 (Credits: 18)

Exam Slot	Course No: Name	e No: Name	L- T - P	Internal Marks	End Semester Exam		Credits
					Marks	Dura tion (hrs)	
Α		Advanced Database	3-0-0	40	60,	3	3
.,	04 CS 6102	Management	3-0-0	40	60	3	3
В	04 CS 6104	Automata Theory and Computability		- 10	60	3	3
С	04 63 010 4	High Performance Computer	3-0-0	40	60		
	04 CS 6106	Architecture	3-0-0	40	60	3	3
D	04 CS 6XXX*	Elective 2	3-0-0	40	60	3	3
E	04 CS 6XXX^	Elective 3	0-0-4	100	0	0	2
	04 CS 6192	Mini Project		100	0	0	1
	04 CS 6194	Advanced Computing Lab	0-0-2	100			18
		Total	21	• ^See	List of Elec	tives -III	for slot

<sup>\*</sup>See List of Electives -II for slot D

#### List of Elective - II Courses

E	lective - i	Courses	
	Exam	Course	Course Name
	Slot	Code	Information Retrieval and Data Mining
Ì	D	04 CS 6108	Information Retrieval and Date
1	D	04 CS 6112	VIRTUALIZING TECHNIQUES
	D	04 CS 6114	Web Security
		04 CS 6116	Agent Based Systems
	D	04 (3 6110	7.60

#### List of Elective - III Courses

Flective	III COLITOR	Course Name
Exam	Course	Course Name
Slot	Code	
F	04 CS 6118	Bioinformatics
	24 66 6122	Digital Image Processing
	04 CS 6124	
E	04 03 0	
E	04 CS 6126	Liniocasco

Name			L- T - P	Internal Marks	End Semester Exam		Credits
Slot	Course ivo.				Marks	Dura tion (hrs)	
NA	04 CS 7190	90 Industrial Training	0-0-4	NA	NA	NA	Pass /Fail
NA .	0. 2	Tot		LAA Toch ir	Comput	6 Scien	0 ce &

3 APJ Abdul Kalam Technological University | Cluster 4 | M. Tech in Computer Science &

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#### M. Tech Program in Computer Science and Engineering

Semester 3 (Credits: 14)

Exam Slot	Course No:	rse No: Name		L-T-P	Internal Marks	End Semester Exam		Credits
						Marks	Dura tion (hrs)	
Α	04 CS 7XXX*	Elective - IV		3-0-0	40	60	3	3
В	04 CS 7XXX^	Elective - V		3-0-0	40	60	3	3
	04 CS 7191	Seminar - II		0-0-2	100	0	0	2
	04 CS 7193	Project (Phase - I)		0-0-12	50	0	0	6
			Total	20				14

<sup>\*</sup>See List of Electives-IV for slot A

#### **List of Elective - IV Courses**

Exam Slot	Course Code	Course Name
Α	04 CS 7101	Cyber Forensics
Α	04 CS 7103	Distributed Computing Systems
Α	04 CS 7105	Wireless Sensor Networks
Α	04 CS 7107	Text Mining and Language Processing

#### **List of Elective - V Courses**

Exam Slot	Course Code	Course Name
В	04 CS 7109	Big Data processing
В	04 CS 7111	Computer Vision
В	04 CS 7113	Compiler Design
В	04 CS 7115	Parallel Algorithms

#### Semester 4 (Credits: 12)

Exam Slot	Course No:	Name	L-T-P	Internal Marks	External Evaluation Marks		Credits
NA	04 CS 7194	Project (Phase -II)	0-0-21	70	30	NA	12
		Total	21				12

Total: 67

4 APJ Abdul Kalam Technological University | Cluster 4 | M. Tech in computer Science & NOINEEPING Engg.

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<sup>^</sup>See List of Electives-V for slot B

#### APJ Abdul Kalam Technological University

Cluster 4: Kottayam

#### M. Tech Program in Mechanical Engineering (Industrial Engineering & Management)

Scheme of Instruction and Syllabus: 2



Compiled By
Rajiv Gandhi Institute of Technology, Kottayam
July 2015

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#### **APJ Abdul Kalam Technological University** (Kottayam Cluster)

#### M. Tech Program in Industrial Engineering and Management

#### Scheme

**Credit requirements** 

: 66 credits (22+18+14+12)

**Normal Duration** 

: Regular: 4 semesters; External Registration: 6 semesters;

Maximum duration

: Regular: 6 semesters; External Registration: 7 semesters.

Courses: Core Courses: Either 4 or 3 credit courses; Elective courses: All of 3 credits

Allotment of credits and examination scheme:-

**ELIGIBILITY:** 

B. Tech/B.E in any branch of engineering with a minimum of 60 % Marks.

#### **SEMESTER-1**

Exam Slot	COURSE No.:	Name	L-T-P	Internal Marks	End Sem. Exam		Credits	
	04 145 5404	_			Marks	Hrs	(22)	
A	04 ME 6101	Business Mathematics	3-1-0	40	60	3	4	
В	04 ME 6103	Business Practice and Industrial Economics	3-1-0	40	60	3	4	
С	04 ME 6105	Materials & Supply Chain Management	3-0-0	40	60	3	3	
D	04 ME 6107	Work System Design	3-0-0	40	60	3	3	
E	04 ME 61XX	Elective - I	3-0-0	40	60	3	3	
	04 GN 6001	Research Methodology	0-2-0	100	0	0	2	
	04 ME 6191	Seminar – I	0-0-2	100	0	0	2	
	04 ME 6193	Industrial Engineering Lab	0-0-2	100	0	0	1	
		Total	23				22	

#### List of Elective -I Courses:

Exam Slot	Course No.	COURSE NAME
E	04 ME 6109	Marketing and Consumer Behaviour
E	04 ME 6111	Marketing Logistics
E	04 ME 6113	Safety and Environment Management System
E	04 ME 6115	Organizational Behaviour

<sup>1</sup> APJ Abdul Kalam Technological University | Cluster 04 | M. Tech Program in Industrial Engineering & Management



#### **SEMESTER-2**

Exam Slot	Course No:	Name	L- T - P	Internal Marks	End Sem. Exam				Credits (18)
•				- Williams	Marks	hrs	(10)		
Α	04 ME 6102	Quantitative Techniques	3-0-0	40	60	3	3		
В	04 ME 6104	Quality Management	3-0-0	40	60	3	3		
С	04 ME 6106	Financial Management and Accounting	3-0-0	40	60	3	3		
D	04 ME 61XX	Elective -II	3-0-0	40	60	3	3		
E	04 ME 61XX	Elective -III	3-0-0	40	60	3	3		
	04 ME 6192	Mini Project	0-0-4	100	0	0	2		
	04 ME 6194	Software Lab	0-0-2	100	0	0	1		
		Total	21				18		

#### List of Elective -II Courses

Exam Slot	COURSE No.	COURSE NAME
D	04 ME 6108	Soft Computing Techniques
D	04 ME 6112	Plant Engineering and Maintenance
D	04 ME 6114	Practical Project Management
D	04 ME 6116	Industrial Scheduling

#### List of Elective -III Courses

Exam Slot	COURSE No.	COURSE NAME
E	04 ME 6118	Reliability Engineering And Management
E	04 ME 6122	Business Communication and Report writing
E	04 ME 6124	Total Quality Management
E	04 ME 6126	Management Information System

#### **SUMMER BREAK**

Exam Slot	Course No:	Name	L- T - P	Internal Marks	End Se Exar <b>Marks</b>	Credits (0)
NA	04 ME 7190	Industrial Training	0-0-4			Pass/ Fail

<sup>2</sup> APJ Abdul Kalam Technological University | Cluster 04 | M. Tech Program in Industrial Engineering & Management



#### **SEMESTER-3**

Exam	Course No:	Name	L- T - P	Internal Marks	End Sem. Exam		Credits (14)
Slot	course ivo.				Marks	hrs	(14)
A	04 ME 71XX	Elective 4	3-0-0	40	60	3	3
В	04 ME 71XX	Elective 5	3-0-0	40	60	3	3
NA	04 ME 7191	Seminar-II	0-0-2	100	0	0	2
NA	04 ME 7193	Project (Phase 1)	0-0-12*	50	0	0	6
		Total	20				14

#### List of Elective-IV Courses:

Exam Slot	COURSE No.	COURSE NAME			
A	04 ME 7101	System Modelling and Simulation			
Α	04 ME 7103	Modern Manufacturing System Design			
Α	04 ME 7105	Human Resource Management			
Α	04 ME 7107	Industrial Ergonomics			

#### List of Elective-V Courses:

Exam Slot	COURSE No.	COURSE NAME
В	04 ME 7109	Knowledge Management
В	04 ME 7111	Industrial Relations
В	04 ME 7113	Integrated Materials Management
В	04 ME 7115	Heuristics of Decision Making

#### SEMESTER-4

Exam Slot	Course No:	Name	L-T-P	Internal Marks	External Evaluation Marks	Credits (12)
NA	04 ME 7194	Project (Phase 2)	0-0-21	70	30	12

**Total: 66 Credits** 

3 APJ Abdul Kalam Technological University | Cluster 04 | M. Tech Program in Industrial Engineering & Management

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APJ Abdul Kalam Technological University

Cluster 4: Kottayam

M. Tech Program in Electrical Engineering (Power Electronics & Power Systems)

Scheme of Instruction and Syllabus: 2015 Admissions



Compiled By
Rajiv Gandhi Institute of Technology, Kottayam
July 2015

PRINCIPAL
MANGALAM COLLEGE OF ENGINEERING



#### APJ Abdul Kalam Technological University (Kottayam Cluster)

#### M. Tech Program in Power Electronics and Power Systems

#### Scheme of Instruction

Credit requirements

: 67 credits (22+19+14+12)

Normal Duration

: Regular: 4 semesters; External Registration: 6 semesters;

Maximum duration

: Regular: 6 semesters; External Registration: 7 semesters. Courses: Core Courses: Either 4 or 3 credit courses; Elective courses: All of 3 credits

Allotment of credits and examination scheme:-

Semester 1 (Credits: 22)

Exam Slot	Course No:	Name	L-T-P	Internal Marks	End Semester Exam		Credits (22)
	•				Marks	Dura tion (hrs)	
Α	04 EE 6001	Optimization Techniques for Engineering Applications	3-0-0	40	60	3	3
В	04 EE 6301	Power Electronic Devices & Circuits	4-0-0	40	60	3	4
С	04 EE 6403	Computer Applications in Power Systems	3-1-0	40	60	3	4
D	04 EE 6405	Power System Operation and Control	3-0-0	40	60	3	3
Ε	04 EE 6XXX*	Elective - I	3-0-0	40	60	3	3
	04 GN 6001	Research Methodology	0-2-0	100	0	0	2
	04 EE 6491	Seminar - I	0-0-2	100	0	0	2
	04 EE 6493	Power Systems Simulation Lab	0-0-2	100	0	0	1
		Total	23				22

\*See List of Electives-I for slot E

#### List of Elective - I Courses

Exam Slot	Course No.	Course Name	
Ε	04 EE 6103	System Theory	
Ε	04 EE 6200	Electric Drive Systems	
Ε	04 EE 6205	Modelling and Analysis of Electrical Machines	
E	04 EE 6300	Advanced Power Semiconductor Devices	

M. Tech (Power Electronics and Power Systems)

2 APJ Abdul Kalam Technological University | Cluster 04 | M. Tech Program in Power Electronics and Power Systems





#### Semester 2 (Credits: 19)

Exam Slot	Course No:	Name	L-T-P	Internal Marks	End Semester Exam		Credits
					Marks	Dura tion (hrs)	
A	04 EE 6302	Switched Mode Power Converters	3-1-0	40	60	3	4
В	04 EE 6602	Embedded Controllers for Power Convertors	3-0-0	40	60	3	3
С	04 EE 6418	Power System Dynamics and Stability	3-0-0	40	60	3	3
	04 EE 6XXX*	Elective - II	3-0-0	40	60	3	3
D		Elective - III	3-0-0	40	60	3	3
E	04 EE 6XXX^	Mini Project	0-0-4	100	0	0	2
	04 EE 6390	Power Electronics Lab	0-0-2	100	0	0	1
	0,22000	Total	22		et of Flortin		19

<sup>\*</sup>See List of Electives -II for slot D

#### **List of Elective - II Courses**

Exam Slot	Course Code	Course Name
D	04 EE 6002	Computational Intelligent Techniques
	04 EE 6106	Stochastic Modelling and Applications
	04 EE 6432	High Voltage DC Transmission
D	04 EE 6506	Energy Conservation and Management

#### **List of Elective - III Courses**

Exam Slot	Course Code	Course Name
	04 EE 6118	Advanced Digital Signal Processing
	04 EE 6212	Applications of Special Electrical Machines
	04 EE 6308	Analysis, Design and Grid Integration of Photovoltaic Systems
		FACTS and Power Quality
Ε	04 EE 6444	FACIS and rower quanty

3 APJ Abdul Kalam Technological University | Cluster 04 | M. Tech Program in Power Electronics and Power Systems

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<sup>^</sup>See List of Electives -III for slot E



#### M. Tech (Power Electronics and Power Systems)

#### Summer Break

Exam Slot	Course No:	Name	L-T-P	internal Marks	End Semester Exam		Credits	
					Marks	Dura tion (hrs)		
NA	04 EE 7490	Industrial Training		0-0-4	NA	NA	NA	Pass /Fail
			Total	4				0

#### Semester 3 (Credits: 14)

Exam Slot	Course No:	: Name	L-T-P	Internal Marks	End Semester Exam		Credits
					Marks	Dura tion (hrs)	
Α	04 EE 7XXX*	Elective - IV	3-0-0	40	60	3	3
В	04 EE 7XXX^	Elective - V	3-0-0	40	60	3	3
	04 EE 7491	Seminar - II	0-0-2	100	0	0	2
	04 EE 7493	Project (Phase - I)	0-0-12	50	0	0	6
		Total	20				14

<sup>\*</sup>See List of Electives-IV for slot A

#### List of Elective - IV Courses

Exam Slot	Course Code	Course Name
Α	04 EE 7105	Robotics and Automation
Α	04 EE 7303	Power Electronic Applications in Renewable Energy
Α	04 EE 7409	Digital Protection of Power Systems
Α	04 EE 7503	Renewable Energy Systems

#### List of Elective - V Courses

Exam Slot	Course Code	Course Name
В	04 EE 7113	Industrial Control Electronics
В	04 EE 7307	Numerical Simulation of Power Electronic Systems
В	04 EE 7421	Electricity Deregulation
В	04 EE 7603	Advanced Controllers for Embedded Systems

4 APJ Abdul Kalam Technological University | Cluster 04 | M. Tech Program in Power Electronics and Power Systems

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<sup>\*</sup>See List of Electives-V for slot 8



#### M. Tech (Power Electronics and Power Systems)

Semester 4 (Credits: 12)

Exam Slot	Course No:	Name L-T-P	L-T-P	Internal Marks	- 1 -1-1-		Credits
NA	04 EE 7494	Project (Phase -II)	0-0-21	70	30	NA	12
		To	_	7.0			12

Total: 67

#### APJ Abdul Kalam Technological University

# Cluster 4: Kottayam M. Tech Program in Civil Engineering (Structural Engineering & Construction Management) Scheme of Instruction & Syllabus: 2015 Admissions



Compiled By Rajiv Gandhi Institute of Technology, Kottayam July 2015

MANGALAM COLLEGE OF ENGINEERING



# APJ Abdul Kalam Technological University (Kottayam Cluster)

# M. Tech Program in STRUCTURAL ENGINEERING AND CONSTRUCTION MANAGEMENT

#### Scheme

Credit requirements : 67 credits (22+19+14+12)

Normal Duration

: Regular: 4 semesters; External Registration: 6 semesters;

Maximum duration

: Regular: 6 semesters; External Registration: 7 semesters.

Courses: Core Courses: Either 4 or 3 credit courses; Elective courses: All of 3 credits

Allotment of credits and examination scheme:-

Semester 1 (Credits: 22)

Slot A	Course No:	Name	L- T - P	Internal Marks	End Semester Exam		Credits	
	04 CE 6401				Marks	Dura tion (hrs)		
	04 CE 6401	Analytical methods in Engineering	3-1-0	40	60	3	4	
В	04 CE 6403	Theory of Elasticity						
C	04 CE 6405		3-1-0	40	60	3	4	
D	04 CE 6407	Construction Management	3-0-0	40	60	3	3	
		Advanced Design of Concrete Structures	3-0-0	40	60	3	3	
E	04 CE 6XXX*	Elective - I	2.2.					
	04 GN 6001	Research Methodology	3-0-0	40	60	3	3	
	04 CE 6491	Seminar - I	0-2-0	100	0	0	2	
	04 CE 6493		0-0-2	100	0	0	2	
	0 7 62 0433	Computer Application Lab	0-0-2	100	0	0		
		Total	23				1	
						- 1	22	

\*See List of Electives-I for slot E

#### List of Elective - I Courses

Exam Slot	Course No.	Course Name
Ε	04 CE 6409	Construction and Contracts Management
Ε	04 CE 6411	Structural Dynamics
Ε	04 CE 6413	Construction Planning, Scheduling and Control
E	04 CE 6415	Prestressed Concrete Structures

2 APJ Abdul Kalam Technological University | Cluster 4 | M. Tech in Structural Engineering & Construction Management



### Semester 2 (Credits: 18)

Exam Slot	Course No:	Name	L-T-P	Internal Marks	End Semester Exam		Credits
					Marks	Dura tion (hrs)	
A	04 EC 6502	Analog Integrated Circuits	3-0-0	40	60	3	3
В	04 EC 6504	Advanced CMOS VLSI	3-0-0	40	60	3	3
• C	04 EC 6506	Embedded Operating Systems & RTOS	3-0-0	40	60	3	3
D	04 EC 65XX	Elective - 2	3-0-0	40	60	3	3
Ε	04 EC 65XX	Elective - 3	3-0-0	40	60	3	3
	04 EC 6592	Mini Project	0-0-4	100	0	0	2
	04 EC 6594	Lab	0-0-2	100	0	0	1
	(5)	Total	21				18

<sup>\*</sup>See List of Electives -II for slot D

#### **List of Elective - II Courses**

Exam Slot	Course Code	Course Name
D	04 EC 6508	VLSI Testing
D	04 EC 6512	Introduction to MEMS
D	04 EC 6514	DSP Based System Design
D	04 EC 6516	Hardware Software Co- Design

#### List of Elective - III Courses

Exam Slot	Course Code	Course Name
E	04 EC 6518	VLSI Digital Signal Processing
Ε	04 EC 6522	Reconfigurable Computing
Ε	04 EC 6524	Embedded Control Systems
E	04 EC 6526	Electronic Packaging

#### **Summer Break**

Exam Slot	Course No:	Name	L-T-P	Internal Marks	End Semester Exam		Credits
					Marks	Dura tion (hrs)	
NA	04 EC 7590	Industrial Training	0-0-4	NA	NA	NA	Pass /Fail
		Total	4				0

3 APJ Abdul Kalam Technological University|Cluster 4|M. Tech in VLSI & Embedded Systems

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<sup>^</sup>See List of Electives -III for slot E



Semester 3 (Credits: 14)

Exam Slot	Course No:	Name	t- T - P	internal Marks	End Semester Exam		Credits
					Marks	Dura tion (hrs)	
Α	04 EC 75XX	Elective - 4	3-0-0	40	60	3	3
В	04 EC 75XX	Elective - 5	3-0-0	40	60	3	3
	04 EC 7591	Seminar II	0-0-2	100	0	0	2
	04 EC 7593	Project (Phase 1)	0-0-12	50	0	0	6
		Total	20				14

<sup>\*</sup>See List of Electives-IV for slot A

#### **List of Elective - IV Courses**

Exam Slot	Course Code	Course Name
Α	04 EC 7501	Mixed VLSI Circuits Design
Α	04 EC 7503	System On Chip
Α	04 EC 7505	Computer Architecture And Parallel Processing
Α	04 EC 7507	Electronic System Design

#### **List of Elective - V Courses**

Exam Slot	Course Code	Course Name			
В	04 EC 7509	High speed Digital Design			
В	04 EC 7511	NANO Devices and Circuits			
В	04 EC 7513	Power Management of Embedded Systems			
В	04 EC 7515	VLSI For Wireless Communication			

#### Semester 4 (Credits: 12)

Slot Slot	Course No:		L-T-P	Internal Marks	External Evaluation Marks		Credits
NA	04 EC 7594	Project (Phase -II)	0-0-21	70	30	NA	12
		Total	21			1111	12

Total: 65

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<sup>^</sup>See List of Electives-V for slot B

<sup>5</sup> APJ Abdul Kalam Technological University | Cluster 4 | M. Tech in VLSI & Embedded Systems

APJ Abdul Kalam Technological University

Cluster 4: Kottayam

M. Tech Program in
Electronics & Communication
Engineering
(VLSI & Embedded Systems)

Scheme of Instruction & Syllabus: 2015 Admissions



Compiled By Rajiv Gandhi Institute of Technology, Kottayam July 2015



#### **APJ Abdul Kalam Technological University**

#### (Kottayam Cluster)

#### M. Tech in Electronics and Communication Engineering (VLSI and Embedded Systems)

#### Scheme

Credit requirements : 65 credits (21+18+14+12)

Normal Duration

: Regular: 4 semesters; External Registration: 6 semesters;

Maximum duration

: Regular: 6 semesters; External Registration: 7 semesters.

Courses: Core Courses: Either 4 or 3 credit courses; Elective courses: All of 3 credits

ELIGIBILITY: B.Tech / B.E in Electronics and Communication engineering, or allied branches with strong focus in electronics engineering/Biomedical Engineering.

#### Allotment of credits and examination scheme:-

Semester 1 (Credits:21)

Exam Slot	Course No:	No: Name	L-T-P	Internal Marks	End Semester Exam		Credits
					Marks	Dura tion (hrs)	
Α	04EC6501	VLSI Technology	4-0-0	40	60	3	4
В	04EC6503	Advanced Digital Design	3-0-0	40	60	3	3
C	04EC6505	CMOS VLSI Design	3-0-0	40	60	3	3
D	04EC6507	Design with ARM Microcontrollers	3-0-0	40	60	3	3
Ε	04EC65XX	Elective-1	3-0-0	40	60	3	3
	04GN6001	Research Methodology	0-2-0	100	0	0	2
	04EC6591	Seminar	0-0-2	100	0	0	2
	04EC6593	Lab	0-0-2	100	0	0	1
		Total	22				21

<sup>\*</sup>See List of Electives-I for slot E

#### List of Elective - I Courses

Exam Slot	Course No.	Course Name
E	04 EC 6509	ASIC & FPGA
Ε	04 EC 6511	VLSI Design Automation
E	04 EC 6513	Embedded Network Controllers
E	04 EC 6515	Embedded Software Design

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## Semester 2 (Credits: 19)

Exam Slot	Course No:	Name	L-T-P	Internal Marks	End Semester Exam		Credits
					Marks	Dura tion (hrs)	
A	04 CE 6402	Project Planning and Implementation	3-1-0	40	60	3	4
В	04 CE 6404	Finite Element Analysis	3-0-0	40	60	3	3
C	04 CE 6406	Theory of Plates & Shells	3-0-0	40	60	3	3
D	04 CE 6XXX*	Elective - II	3-0-0	40	60	3	3
E	04 CE 6XXX^	Elective - III	3-0-0	40	60	3	3
	04 CE 6492	Mini Project	0-0-4	100	0	0	2
	04 CE 6494	Structural Engineering Lab	0-0-2	100	0	0	1
		Total	22				19

<sup>\*</sup>See List of Electives -II for slot D

#### **List of Elective - II Courses**

Exam Slot	Course Code	Course Name
D	04 CE 6408	Advanced Analysis of Structures
D	04 CE 6412	Design of Reinforced Concrete Foundations
D	04 CE 6414	Earthquake Analysis and Design of Structures
D	04 CE 6416	Construction methods and Equipments

#### **List of Elective - III Courses**

Exam	Course	Course Name
Slot	Code	
E	04 CE 6418	Advanced Concrete Technology
E	04 CE 6422	Advanced Steel Structures
E	04 CE 6424	Quantitative methods in Construction
Е	04 CE 6426	Project Formulation and Appraisal

#### Summer Break

Exam Slot	Course No:	Name	L- T - P	Internal Marks		End Semester Exam	
SIOL					Marks	Dura tion (hrs)	
NA	04 CE 7490	Industrial Training	0-0-4	NA	NA	NA	Pass /Fail
		Total	4				0

Semester 3 (Credits: 14)

3 APJ Abdul Kalam Technological University | Cluster 4 | M. Tech in Structural Engineering & Construction Management

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<sup>^</sup>See List of Electives -III for slot E



Exam Slot	Course No:	Name	L-T-P	Internal Marks	End Semester Exam		Credits
					Marks	Dura tion (hrs)	
Α	04 CE 7XXX*	Elective - IV	3-0-0	40	60	3	3
В	04 CE 7XXX^	Elective - V	3-0-0	40	60	3	3
	04 CE 7491	Seminar - II	0-0-2	100	0	0	2
	04 CE 7493	Project (Phase - I)	0-0-12	50	0	0	6
	of Flores and	Total	20				14

<sup>\*</sup>See List of Electives-IV for slot A

#### **List of Elective - IV Courses**

Exam Slot	Course Code	Course Name
Α	04 CE 7401	Design of Steel – Concrete Composite Structures
Α	04 CE 7403	Design of Bridges
Α	04 CE 7405	Construction Economics and Finance
Α	04 CE 7407	Design of Tall Buildings

#### List of Elective - V Courses

Exam Slot	Course Code	Course Name
В	04 CE 7409	Design of Cylindrical shell and Folded Plates
В	04 CE 7411	Construction Project Management
В	04 CE 7413	Maintenance & Rehabilitation of Structures
В	04 CE 7415	Construction Personnel Management

#### Semester 4 (Credits: 12)

Exam Slot	Course No:	Name		L-T-P	Internal Marks	Exte Evalua Ma	ation	Credits
NA	04 CE 7494	Project (Phase -II)		0-0-21	70	30	NA	12
			Total	21				12

Total: 67

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<sup>^</sup>See List of Electives-V for slot B

<sup>4</sup> APJ Abdul Kalam Technological University | Cluster 4 | M. Tech in Structural Engineering & Construction Management

# APJABDUL KALAM TECHNOLOGICAL UNIVERSITY MBA Course Structure 2017 (Full Time)

#### TRIMESTER

Exam	Course	Course Name	L-T-P	Internal	End	Exam	Credits
Slot	No.			Marks	Trimester	Duration	o o o o o o o
					Marks	(hours)	
	11	Quantitative Techniques	3-0-0	40	60	3	3
	12	Organizational Behaviour I	3-0-0	40	60	3	3
	13	Managerial Economics	3-0-0	40	60	3	3
	14	Business Communication	3-0-0	40	60	3	3
	15	Accounting for Managers	3-0-0	40	60	3	3
	16	Business and Society	3-0-0	40	60	3	
	17	Soft Skills I	0-1-0	20	00	3	3
	18	Project	0-0-9	20			
		TOTAL	18-2-9	260	360		18

#### TRIMESTER II

Exam	Course	Course Name	L-T-P	Internal	End	Exam	Credits
Slot	Nđ.			Marks	Trimester	Duration	Orcuns
					Marks	(hours)	
	21	Organizational Behaviour II	3-0-0	40	60	3	3
	22	Macroeconomics	3-0-0	40	60	3	3
	23	Marketing Management I	3-0-0	40	60	3	3
	24	Operations Management	3-0-0	40	60	3	3
	25	Financial Management I	3-0-0	40	60	3	3
	26	Business Law	3-0-0	40	60	3	3
	27	Soft Skills II	0-2-0	20		•	•
	28	Project	0-0-9				
		TOTAL	18-2-9	260	360		18

#### TRIMESTER III

Exam	Course	Course Name	L-T-P	Internal	End	Exam	Credits
Slot	No.			Marks	Trimester	Duration	
					Marks	(hours)	
	31	Marketing Management II	3-0-0	40	60	3	3
	32	Financial Management II	3-0-0	40	60	3	3
	33	Human Resource Management	3-0-0	40	60	3	3
	34	Business Research Methods	1.5-0-0	20	30	1.5	1.5
	35	Management Information System	1.5-0-0	20	30	1.5	1.5
	36	Operations Research	3-0-0	40	60	3	3
	37	Strategic Management	3-0-0	40	60	3	3
	38	Soft Skills III	0-3-0		60	-	3
		TOTAL	18-3-0	240	420		21

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#### TRIMESTER IV

Exam Slot	Course No.	Course Name	L-T-P	Internal	End	Exam	Credits
Oiot	140.			Marks	Trimester Marks	(hours)	
	41	International Business	3-0-0	40	60	3	3
	42	Business Analytics	3-0-0	40	60	3	3
	43	Elective I	3-0-0	40	60	3	3
	44	Elective II	3-0-0	40	60	3	3
	45	Elective III	3-0-0	40	60	3	3
	46	Elective IV	3-0-0	40	60	3	3
		TOTAL	18-0-0	240	360	3	18

#### TRIMESTER V

Exam	Course	Course Name	L-T-P	Internal	End	Exam	Credits
Slot	No.			Marks	Trimester	Duration	Credits
	-	_			Marks	(hours)	
	51	Entrepreneurship	3-0-0	40	60	3	3
	52	Business Ethics and Corporate Governance	3-0-0	40	60	3	3
	53	Elective V	3-0-0	40	60	3	3
	54	Elective VI	3-0-0	40	60	3	3
	55	Elective VII	3-0-0	40	60	3	3
	56	Elective VIII	3-0-0	40	60	3	3
	57	Project	0-0-4	100	-	-	4
		TOTAL	18-0-4	340	360		22

#### TRIMESTER VI

Exam	Course	Course Name	L-T-P	Internal	End	Exam	Credits
Slot	No.			Marks	Trimester	Duration	
					Marks	(hours)	
	61	Cross Cultural Management	3-0-0	40	60	3	3
	62	Elective IX	3-0-0	40	60	3	3
	63	Elective X	3-0-0	40	60	3	3
	64	Comprehensive Project	0-0-6	100	100	3	6
	65	Internship	0-0-3	60	100		2
		TOTAL	9-0-9	280	280		3
			100		200		18

#### CREDITS AND MARKS

- ONLDITO AND IV	ININO
Total credits	115
Internal marks	1620
University marks	2140
Total marks	3760

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SI.No.	Code	HR Electives	Trimester
1	HR-T4-1	Training and Development	
2	HR-T4-2	Organizational Change and Development	T4
3	HR-T4-3	Industrial Relations and Labour Law	T4
4	HR-T4-4	Managing self and others	T4
5	HR-T4-5	Talent Sourcing and acquisition	T4
6	HR-T4-6	Industrial Psychology	T4
7	HR-T5-7	Performance Management	T4
8	HR-T5-8	Compensation Management	T5
9	HR-T5-9	Leadership, Power and Influence	T5
10	HR-T5-10	Negotiation and Conflict Resolution	T5
11	HR-T5-11	HRM: Policy and Strategy	
12	HR-T5-12	Global HRM	T5
13	HR-T6-13	Management of Creativity	T5
14	HR-T6-14	HR Analytics	T6
15	HR-T6-15	HR Consulting: Profession and Practice	T6

SI. No.	Code	Finance Electives	Trimester
1	FIN-T4-1	Financial Markets and Services	T4
2	FIN-T4-2	Project Finance	T4
3	FIN-T4-3	Financial Risk Management	T4
4	FIN-T4-4	Commercial Banking System	T4
5	FIN-T4-5	Investment Management	T4
6	FIN-T4-6	Financial Statement Analysis	T4
7	FIN-T5-7	Behavioural Finance	T5
8	FIN-T5-8	Security Analysis and Portfolio Management	T5
9	FIN-T5-9	Corporate Taxation	T5
10	FIN-T5-10	International Finance	T5
11	FIN-T5-11	NBFCs and Microfinance	T5
12	FIN-T5-12	Cost Accounting and Budget Control	T5
13	FIN-T6-13	Strategic Financial Management	T6
14	FIN-T6-14	Financial Derivatives	T6
15	FIN-T6-15	Insurance Management	T6

SI. No.	Code	Marketing Electives	Trimester
1	MKT-T4-1	Rural Marketing	T4

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2	MKT-T4-2	Consumer Behaviour	T4
3	MKT-T4-3		14
4	MKT-T4-4	Social Marketing	T4
5	ACCRECATE VALUE OF THE PARTY OF	Services Marketing	T4
_	MKT-T4-5	Marketing Research	T4
6	MKT-T4-6	Sales and Distribution Management	
7	MKT-T5-7	International Marketing	T4
8	MKT-T5-8	Prond M.	T5
9	MKT-T5-9	Brand Management	T5
10	THE RESERVE OF THE PARTY OF THE	Retail Management	T5
	MKT-T5-10	Integrated Marketing Communications	
11	MKT-T5-11	Customer Relationship Management	T5
12	MKT-T5-12	Digital and Social Media Marketing	T5
13	MKT-T6-13	Customer Analytics	T5
14	MKT-T6-14		T6
15		B2B Marketing	Тб
	MKT-T6-15	Strategic Marketing	T6

SI. No.	Code	Operations Floating	
1	OM-T4-1	Operations Electives Supply Chain and Logistics Management	Trimester
2	OM-T4-2	Facilities and Location Management	T4
3	OM-T4-3	Quality Management	T4
4	OM-T4-4		T4
5	OM-T4-5	Business Process Reengineering World Class Manufacturing	T4
6	OM-T4-6	Logistics and Materials Handling	T4
7	OM-T5-7	Healthcare Management	T4
8	OM-T5-8	Services Operations Management	T5
9	OM-T5-9	Technology Management	T5
10	OM-T5-10		T5
11	OM-T5-11	Innovation Management and New Product Development	T5
12	OM-T5-12	Green Logistics and Supply Chain Management Six Sigma and TQM	T5
13	OM-T6-14		T5
14	OM-T6-15	Advanced Project Management	T6
15	OM-T6-16	Advanced Maintenance Management	T6
	JOIN-10-16	Business Sustainability	T6

SI. No.	Code	Systems Electives	Trimester
1	SYS-T4-1	System Analysis and Design	T4
2	SYS-T4-2	Software Engineering	T4
3	SYS-T4-3	ERP	T4
4	SYS-T4-4	e-Business	T4

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5	SYS-T4-5	e-Governance	T4
6	SYS-T4-6	Business Database System	T4
7	SYS-T5-7 Software Project Management		T5
8	SYS-T5-8	Knowledge Management in IT and ITES	T5
9	SYS-T5-9	Business Intelligence and Data warehousing	T5
10	SYS-T5-10	Simulation for Managers	T5
11	SYS-T5-11	Global Information System	T5
12	SYS-T5-12	Cloud Computing	T5
13	SYS-T6-13	Business Datamining	Т6
14	SYS-T6-14	Big data Analytics in Business	Т6
15	SYS-T6-15	Information Security and Risk Management	T6

#### **CURRICULUM FOR MBA, 2020**

#### SEMESTER I

Exam	Course	Course Name	L-T-P	Internal	End	Exam	Credits
Slot	No.			Marks	Semester	Duration	
		A DATA A TATALA	IZAI	A h d	Marks	(hours)	
A	20MBA101	Introduction to Business AD	3-0-0	/40/VI	60	3	3
В	20MBA103	Quantitative Techniques for Managers	4-0-0	40	60	3	4
С	20MBA105	Organizational Behaviour	3-0-0	40	60	3	3
D	20MBA107	Business Economics UNIVER	4-0-0 I	40	60	3	4
E	20MBA109	Information Systems for Managers	3-0-0	40	60	3	3
F	20MBA111	Accounting for Managers	4-0-0	40	60	3	4
G	20MBA113	Ethics, Governance and Corporate	3-0-0	40	60	3	3
		Responsibility		12/00/2			
Н	20MBA115	Legal Systems for Business	3-0-0	40	60	3	3
	20MBANC1	Employability Enhancement Programme	0-0-2				
		TOTAL	27-0-2	360	480		27
				ALCOHOLD STORY			

#### SEMESTER II

SEIVIES	SEMESTERII		Control Control of Control of Control	Estd.	-	10000	F-4	Exam	Credits
Exam	Course	Course Name	1 1 1 1 1 1 1 1 1	20.00	L-T-P	Internal	End		Credits
Slot	No.			No. of Concession, Name of Street, or other party of the Concession, Name of Street, or other pa		Marks	Semester	Duration	
3101	140.					1	Marks	(hours)	
^	20MBA102	Marketing Man	agement	2014	4-0-0	40	60	3	4
A			DESCRIPTION OF THE PERSON OF T	2017	4-0-0	40	60	3	4
В	20MBA104	Financial Manag	gement	Marin march	4-0-0	40	00	3	
C	20MBA106	Human Resource	e Management		3-0-0	40	60	3	3
<u></u>				42.00	3-0-0	40	60	3	3
D	20MBA108	Operations Mar	nagement	And Div.	3-0-0	40		3	4
F	20MBA110	Operations Rese	earch		4-0-0	40	60	3	4

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F	20MBA112	Research for Managerial Decisions		•			
-			3-0-0	40	60	3	3
G	20MBA114	Entrepreneurship Development	3-0-0	40	60	12	3
	20MBANC2	Integrated Disaster Management	1-0-1	+10	- 00	3	3
			1-0-1				
		TOTAL	25-0-1	360	480		24
		Mile And The Late of the Late					•

# MBA SUMMER INTERNSHIP OUTSIDE THE COLLEGE ROWEEKS TO 8 WEEKS AM TECHNOLOGICAL SEMESTER III UNIVERSITY

Exam	Course	Course Name	L-T-P	Internal	End	Exam	Credits
Slot	No.		1.6	Marks	Semester	Duration	
					Marks	(hours)	
Α	20MBA201	International Business	4-0-0	40	60	3	4
В	20MBA203	Business Analytics	4-0-0	40	60	3	4
C	20MBA	Elective I	3-0-0	40	60	3	3
D	20MBA	Elective II	3-0-0	40	60	3	3
E	20MBA	Elective III	3-0-0	40	60	3	3
F	20MBA	Elective IV	3-0-0	40	60	3	3
G	20MBA	Elective V	3-0-0	40	60	3	3
	20MBA351	Internship	0-0-6	40	60		3
		TOTAL Estd.	23-0-6	380	420		26

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#### SEMESTER IV

Exam	Course	Course Name	L-T-P	Internal	End	Exam	Credits
Slot	No.			Marks	Semester	Duration	
					Marks	(hours)	
A	20MBA202	Strategic Management	4-0-0	40	60	3	4
В	20MBA204	Industry 4.0 and Al applications for	4-0-0 A I	40	60	3	4
C	20MBA	Business AT ADDUL	3-0-01	40	60	3	3
D	20MBA	Elective VII	3-0-0	40	60	3	3
E	20MBA	Elective VIII	3-0-0	40	60	3	3
	20MBA352	Project & Comprehensive Viva Voce	0-0-10	100	100	3	5
	20MMOOC	Any PG Management Course of 3 Credits of NPTEL/SWAYAM	0-0-3				3
		TOTAL TOTAL		350	370		25
		G.TOTAL		1450	1750		102

#### 3. LIST OF ELECTIVES

		W/SUBSIDER CONTROL OF	Erto	10 COMPANY OF STREET	Semester	Exam Slot
Course	HR Electives		ESTO.		Scinestei	
No.						
	. (7.1.1.1	ar and Evacuting D	evelopme	nt	S3	С
20MBA211	Dynamics of Traini	ng and Executing O	2014			
20MBA213	Discovery of Self &	Others			S3	С
201110112		***************************************		100	53	D
20MBA215	Organizational Cha	inge and Developm	ent			_



			$\wedge$
20MBA217	HRM Polices & Strategies	S3	D
20MBA219	Industrial Relations and Labour Law	53	E
20MBA221	Global HRM	S3	E
20MBA223	Human Resource Analytics ARDIII KALAM	S3	F
20MBA225	Leadership, Influence & Power	S3	F
20MBA227	Reward Management	S3	G
20MBA229	Negotiations & Conflict Resolutions	S3	G
20MBA212	Performance Management	S4	С
20MBA214	Management of Creativity & Innovation	S4	С
20MBA216	Team Dynamics & Cross Cultural Management	S4	D
20MBA218	Industrial Psychology	S4	D
20MBA220	HR Consulting: Profession and Practice	S4	E
20MBA222	Talent Source & Acquisitions Estd.	S4	E

Course	Finance Electives	2014	Semester	Exam Slot	
No.				•	
20MBA231	Financial Markets and S	ervices	S3	С	INFERING
2011151155				- LERANTEN	GII.
				ON EGE ON OF	
			MANGA	LAMOSEH	
			Marke		

20MBA233	Project Finance	53	C
20MBA235	Cost Accounting and Budget Control		
20MBA237	Security Analysis and Portfolio Management	53	D
20MBA239		53	D
	Managing Banks and Financial Institutions	53	E
20MBA241	Entrepreneurial Finance CHNOLOGICAL	53	E
20MBA243	International Finance	53	F
20MBA245	Statistics Methods for Financial Analytics	53	F
20MBA247	Financial Technologies	53	G
20MBA249	NBFCs & Micro Finance	53	G
20MBA232	Financial Information Analysis	54	c ·
20MBA234	Financial Derivatives	54	С
20MBA236	Financial Risk Management	54	D
20MBA238	Strategic Financial management Estd.	54	D
20MBA240	Insurance Management	54	E
20MBA242	Financial Applications for Machine Learning	54	Ε

Course		100		Exam Slots
No.	Marketing Electives		Semester	

Semester Exam Slots

Semester

20MBA251	Strategic Marketing Intelligence	S3	С
20MBA253	B2B Marketing	S3	С
20MBA255	Consumer Behavious PI ARDIII KAIAM	S3	D
20MBA257	Services Marketing TECHNOLOGICAL	S3	D
20MBA259	Integrated Marketing Communication FRSITY	S3	E
20MBA261	Marketing Research	S3	E
20MBA263	Retail Management	S3	F
20MBA265	Sales & Distribution Management	<b>S3</b>	F
20MBA267	Brand Management	S3	G
20MBA269	Hospitality and Tourism Marketing.	S3	G
20MBA252	Social Marketing	S4	С
20MBA254	Customer Relationship Management Estd.	<b>S4</b>	С
20MBA256	Rural Marketing	<b>S4</b>	D
20MBA258	Strategic Marketing 2014	S4	D
20MBA260	International Marketing	S4	E
20MBA262	Digital and Social Media Marketing	54	E

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Course No.	Operation Electives	Semester	Exam Slot
20MBA271	Supply Chain Management	S3	С
20MBA273	Facilities & Location Managemen DUI KALAN	S3	С
20MBA275	Quality Management ECHNOLOGICAL	S3	D
20MBA277	Six Sigma & TQM	S3	D
20MBA279	Business Process Reengineering	S3	E
20MBA281	Services & Operations Management	S3	E
20MBA283	Healthcare Management	S3	F
20MBA285	Decision Analysis for Management	S3	F
20MBA287	Advanced Maintenance Management	S3	G
20MBA289	Advanced Project Management	S3	G
20MBA272	Technology Application and IPR Estd.	S4	С
20MBA274	Innovation and New Product Management	S4	С
20MBA276	Business Planning for Small & Medium Enterprises	S4	D
20MBA278	Managing Public Private Partnerships	S4 I	)

PRINCIPAL ENGINEERING

20MBA280	New Business Models	S4	Ε .
20MBA282	World Class Manufacturing	54	E

Course No.	System Electives APLABDUL KALAM	Semester	Exam Slot
20MBA291	System Analysis and Design	S3	С
20MBA293	Global Information System	\$3	С
20MBA295	Business Database System	S3	D
20MBA297	Knowledge Management and IT/ ITES Consulting	S3	D
20MBA299	Information Security and Risk Management	S3	E
20MBA301	Business Intelligence and Data warehousing	S3	E
20MBA303	e-Business	S3	F
20MBA305	Al Strategies for Business	S3	F
20MBA307	e-Governance Estd.	S3	G
OMBA309	Simulation for Managers	S3	G
OMBA292	Business Data Mining 2014	S4	С
OMBA294	Software Project Management	S4	С

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20MBA296	Enterprise Resource Planning	S4	D
20MBA298	Cloud Computing & Cyber Security	S4	D
20MBA302	Enterprise Management in Digital era	54	E
20MBA304	Software Engineering PLABDUL KALAM	S4	E

# TECHNOLOGICAL

Course No.	General Electives UNIVERSITY	Semester	Exam Slot
20MBA311	Managing Employee Satisfaction	S3	С
20MBA313	Econometrics	S3	D
20MBA315	Design Thinking	S3	E
20MBA317	Social Entrepreneurship	S3	F
20MBA319	Tourism Management	S3	G
20MBA321	Hospitality management	S3	С
20MBA312	Management of NGOs	S4	С
20MBA314	Management of Sustainable Business	54	D
20MBA316	Family Business 2014	S4	E
20MBA318	Managing Contracts	54	С

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