



**Jyothi Engineering College**  
NAAC Accredited College with NBA Accredited Programmes\*

Approved by AICTE & affiliated to APJ Abdul Kalam Technological University

A CENTRE OF EXCELLENCE IN SCIENCE & TECHNOLOGY BY THE CATHOLIC ARCHDIOCESE OF TRICHUR

JYOTHI HILLS, VETTIKATTIRI P.O, CHERUTHURUTHY, THRISSUR, PIN-679531 PH: +91-4884-259000, 274423 FAX: 04884-274777



NBA accredited B.Tech Programmes in Computer Science & Engineering, Electronics & Communication Engineering, Electrical & Electronics Engineering and Mechanical Engineering valid for the academic years 2016-2022. NBA accredited B.Tech Programme in Civil Engineering valid for the academic years 2019-2022.

# Syllabus and Curriculum of

## B.Tech in Engineering

Common to all branches

(Combined 1<sup>st</sup> and 2<sup>nd</sup> semesters)

University of Calicut  
(2014 admission)

*ASMAK*  
Dr. SUNNY JOSEPH KALAYATHANKAL  
M.Tech, ICAI, M.Sc, M.Phil, B.Ed  
Ph.D (Computer Science), Ph.D (Maths)  
PRINCIPAL  
Jyothi Engineering College  
Cheruthuruthy P.O.- 679 531



## SCHEME OF COMBINED I & II SEMESTERS B.Tech

Code	Subject	Hours/ Week			Marks		Duration of End Semester examination	Credits
		L	T	P/D	Internal	End Semester		
EN14 101	Engineering Mathematics I	2	1	0	50	100	3	4
EN14 102	Engineering Mathematics II	2	1	0	50	100	3	4
EN14 103	Engineering Physics	2	0	0	50	100	3	3
EN14 103(P)	Engineering Physics Lab.	0	0	1	50	-	-	1
EN14 104	Engineering Chemistry	2	0	0	50	100	3	3
EN14 104(P)	Engineering Chemistry Lab.	0	0	1	50	-	-	1
EN14 105	Engineering Mechanics	2	1	0	50	100	3	6
EN14 106	Basics of Civil and Mechanical Engg.	2	0	0	50	100	3	4
EN14 107	Basics of Electrical and Electronics & Communication Engg.	2	0	0	50	100	3	4
EN14 108	Engineering Graphics	1	0	3	50	100	3	6
EN14 109	Humanities and Communication Skills	2	1	0	50	100	3	2
EN14 110 (P)	Mechanical Workshops	0	0	2	100	-	-	2
EN14 111 (P)	Electrical & Civil Workshops	0	0	2	100	-	-	2
	TOTAL	17	4	9	750	900		42

*Römmys*  
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# **SYLLABUS & CURRICULUM**

of


**B.Tech.**

**CIVIL ENGINEERING**

**(3<sup>rd</sup> to 8<sup>th</sup> semesters)**

**UNIVERSITY OF CALICUT**

**(2014 admission)**

  
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M.Tech, MCA, M.Sc. M.Phil, B.Ed  
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## 2014 SCHEME FOR CIVIL ENGINEERING (CE) BRANCH

### 3<sup>rd</sup> Semester

Code	Subject	Hours/ Week			Marks		Duration of End Semester examination	Credits
		L	T	P/D	Internal	End Semester		
EN14 301	Engineering Mathematics III	3	1	0	50	100	3	4
EN14 302	Computer Programming in C	2	0	2	50	100	3	4
CE14 303	Mechanics of Solids	3	1	0	50	100	3	4
CE14 304	Building Technology I	3	1	0	50	100	3	4
CE14 305	Surveying I	3	1	0	50	100	3	4
CE14 306	Engineering Geology	3	1	0	50	100	3	4
CE14 307 (P)	Surveying Lab I	0	0	3	50	100	3	2
CE14 308 (P)	Materials Testing Lab I	0	0	3	50	100	3	2
	TOTAL	17	5	8				28

**Note:** For EN 14 302 Computer Programming in C, the end semester examination will be held by the University as a theory paper.

### 4<sup>th</sup> Semester

Code	Subject	Hours/ Week			Marks		Duration of End semester examinations	Credits
		L	T	P/D	Internal	End Semester		
EN14 401	Engineering Mathematics IV	3	1	0	50	100	3	4
EN14 402	Environment Science	3	1	0	50	100	3	4
CE14 403	Fluid Mechanics	3	1	0	50	100	3	4
CE14 404	Structural Analysis I	3	1	0	50	100	3	4
CE14 405	Engineering Economics & Principles of Management	3	1	0	50	100	3	4
CE14 406	Surveying II	3	1	0	50	100	3	4
CE14 407 (D)	Civil Engineering Drawing I	0	0	3	50	100	3	2
CE14 408 (P)	Surveying Lab II	0	0	3	50	100	3	2
	TOTAL	18	6	6				28

**e:** Even though the subject CE 14 407 (D) Civil Engineering Drawing I is considered as a practical, the end semester examination will be conducted by the University.

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## 5<sup>th</sup> Semester

Code	Subject	Hours/ Week			Marks		Duration of End Semester examination	Credits
		L	T	P/D	Internal	End Semester		
CE14 501	Structural Design I	3	1	0	50	100	3	4
CE14 502	Building Technology II	3	1	0	50	100	3	4
CE14 503	Transportation Engineering I	3	1	0	50	100	3	4
CE14 504	Structural Analysis II	3	1	0	50	100	3	4
CE14 505	Geotechnical Engineering I	3	1	0	50	100	3	4
CE14 506	Open Channel Hydraulics & Hydraulic Machinery	3	1	0	50	100	3	4
CE14 507(D)	Civil Engineering Drawing II	0	0	3	50	100	3	2
CE14 508(P)	Fluid Mechanics Lab	0	0	3	50	100	3	2
	<b>TOTAL</b>	<b>18</b>	<b>6</b>	<b>6</b>				<b>28</b>

### Note:

- Even though the subject CE 14 507 (D) Civil Engineering Drawing II is considered as a practical, the end semester examination will be conducted by the University.

## 6<sup>th</sup> Semester

Code	Subject	Hours/ Week			Marks		Duration of End Semester examination	Credits
		L	T	P/D	Internal	End Semester		
CE14 601	Structural Design II	3	1	0	50	100	3	4
CE14 602	Transportation Engineering II	3	1	0	50	100	3	4
CE14 603	Hydrology & Irrigation Engineering	3	1	0	50	100	3	4
CE14 604	Structural Analysis III	3	1	0	50	100	3	4
CE14 605	Geotechnical Engineering II	3	1	0	50	100	3	4
CE14 606	Computational Methods and Operations Research	3	1	0	50	100	3	4
CE14 607 (P)	Geotechnical Engineering Lab	0	0	3	50	100	3	2
CE14 608 (P)	Materials Testing Lab II	0	0	3	50	100	3	2
	<b>TOTAL</b>	<b>18</b>	<b>6</b>	<b>6</b>				<b>28</b>

Dr. SUNNY JOSEPH KALAYATHAN  
M.Tech, MCA, M.Sc., M.Phil., B.E.2  
Computer Science, Ph.D (NBA)  
Principal  
College





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## 7<sup>th</sup> Semester

Code	Subject	Hours/ Week			Marks		Duration of End Semester examination	Credits
		L	T	P/ D	Intern al	End Semester		
CE14 701	Structural Design III	3	1	0	50	100	3	4
CE14 702	Design of Hydraulic Structures	2	0	2	50	100	3	4
CE14 703	Environmental Engineering I	3	1	0	50	100	3	4
CE14 704	Elective I	3	1	0	50	100	3	4
CE14 705	Elective II	3	1	0	50	100	3	4
CE14 706 (P)	Computer Applications Lab	0	0	3	50	100	3	2
CE14 707 (P)	Environmental Engineering Lab	0	0	3	50	100	3	2
CE14 708 (P)	Project	0	0	4	100	-		4
	TOTAL	14	4	12				28

### Elective I

- CE14 704(A) Advanced Structural Design I
- CE14 704(B) Advanced Geotechnical Engineering I
- CE14 704(C) Highway Pavement Design
- CE14 704(D) Experimental Stress Analysis (G)
- CE14 704(E) Concrete Technology

### Elective II

- CE14 705(A) Structural Dynamics & Seismic Design
- CE14 705(B) Soil Exploration, Testing and Evaluation
- CE14 705(C) Ecology and Environmental Chemistry
- CE14 705(D) Ground Water Hydrology
- CE13 705(E) Finite Element Methods (G)

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## 8<sup>th</sup> Semester

Code	Subject	Hours/ Week			Marks		Duration of End Semester examination	Credits
		L	T	P/D	Internal	End Semester		
CE14 801	Environmental Engineering II	3	1	0	50	100	3	4
CE14 802	Quantity Surveying & Valuation	3	1	0	50	100	3	4
CE14 803	Construction Engineering & Management	3	1	0	50	100	3	4
CE14 804	Elective III	3	1	0	50	100	3	4
CE14 805	Elective IV	3	1	0	50	100	3	4
CE14 806 (P)	Seminar	0	0	3	100			2
CE14 807 (P)	Project	0	0	7	150			4
CE14 808 (P)	Viva Voce	0	0	0		100	3	4
	<b>TOTAL</b>	<b>15</b>	<b>5</b>	<b>10</b>				<b>30</b>

### Elective III

- CE14 804(A) Advanced Structural Design II
- CE14 804(B) Advanced Geotechnical Engineering II
- CE14 804(C) Surface Hydrology and Water Power
- CE14 804(D) Urban Transportation Planning
- CE14 804(E) Remote Sensing and GIS (G)

### Elective IV

- CE14 805(A) Industrial Structures
- CE14 805(B) Advanced Construction Engg: and Management
- CE14 805(C) Coastal Engineering & Marine Structures
- CE14 805(D) Ground Improvement Techniques
- CE14 805 (E) Environmental Pollution Control Engineering

*Sunny*  
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## BACHELOR OF TECHNOLOGY IN COMPUTER SCIENCE AND ENGINEERING

FOR 2014 ADMISSION ONWARDS

*Amrith*  
Dr. SUNNY JOSEPH KALAYATHANKAL  
M.Tech, MCA, M.Sc, M.Phil, B.Ed  
Ph.D (Computer Science), Ph.D (Maths)  
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## 2014 Scheme for B. Tech. Computer Science and Engineering (CS) Branch for 3<sup>rd</sup> to 8<sup>th</sup> Semesters

### SCHEME OF III SEMESTER B.Tech COURSE

Code	Subject	Hours/Week			Marks		Duration of End Semester Examination	Credits
		L	T	P/D	Internal	End Semester		
EN14 301	Engineering Mathematics III	3	1	0	50	100	3	4
EN14 302	Computer Programming in C	2	0	2	50	100	3	4
CS14 303	Computer Organization & Design	3	1	0	50	100	3	4
CS14 304	Discrete Computational Structures	3	1	0	50	100	3	4
CS14 305	Electronic Circuits	3	1	0	50	100	3	4
CS14 306	Switching Theory & Logic Design	3	1	0	50	100	3	4
CS14 307(P)	Programming Lab	0	0	3	50	100	3	2
CS14 308(P)	Electronics Circuits Lab	0	0	3	50	100	3	2
<b>TOTAL</b>		<b>17</b>	<b>5</b>	<b>8</b>	<b>400</b>	<b>800</b>	<b>24</b>	<b>28</b>

**Note:** For EN14 302 Computer Programming in C, the end semester examination will be held by the University as a theory paper.

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## SCHEME OF IV SEMESTER B.Tech COURSE

Code	Subject	Hours/Week			Marks		Duration of End Semester examination	Credits
		L	T	P/D	Internal	End Semester		
EN14 401B	Engineering Mathematics IV	3	1	0	50	100	3	4
EN14 402	Environment Science	3	1	0	50	100	3	4
CS14 403	Data Structures and Algorithms	3	1	0	50	100	3	4
CS14 404	Object Oriented Programming in java	3	1	0	50	100	3	4
CS14 405	Systems Programming	3	1	0	50	100	3	4
CS14 406	Microprocessor Based Design	3	1	0	50	100	3	4
CS14 407(P)	Data Structures Lab	0	0	3	50	100	3	2
CS14 408(P)	Digital Systems Lab	0	0	3	50	100	3	2
<b>TOTAL</b>		<b>18</b>	<b>6</b>	<b>6</b>	<b>400</b>	<b>800</b>	<b>24</b>	<b>28</b>

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## SCHEME OF V SEMESTER B.Tech COURSE

Code	Subject	Hours/Week			Marks		Duration of End Semester examination	Credits
		L	T	P/D	Internal	End Semester		
CS14 501	Engineering Economics and Principles of Management	3	1	0	50	100	3	4
CS14 502	Software Engineering	3	1	0	50	100	3	4
CS14 503	Operating Systems	3	1	0	50	100	3	4
CS14 504	Database Management Systems	3	1	0	50	100	3	4
CS14 505	Digital Data Communication	3	1	0	50	100	3	4
CS14 506	Theory of Computation	3	1	0	50	100	3	4
CS14 507(P)	Object Oriented Programming Lab	0	0	3	50	100	3	2
CS14 508(P)	Hardware Lab	0	0	3	50	100	3	2
<b>TOTAL</b>		<b>18</b>	<b>6</b>	<b>6</b>	<b>400</b>	<b>800</b>	<b>24</b>	<b>28</b>

*Amma*  
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## SCHEME OF VI SEMESTER B.Tech COURSE

Code	Subject	Hours/Week			Marks		Duration of End Semester examination	Credits
		L	T	P/D	Internal	End Semester		
CS14 601	Embedded System	3	1	0	50	100	3	4
CS14 602	Computer Graphics & Multimedia	3	1	0	50	100	3	4
CS14 603	Compiler Design	3	1	0	50	100	3	4
CS14 604	Computer Networks	3	1	0	50	100	3	4
CS14 605	Graph Theory and Combinatorics	3	1	0	50	100	3	4
CS14 606	Management Information Systems	3	1	0	50	100	3	4
CS14 607(P)	Systems Lab	0	0	3	50	100	3	2
CS14 608(P)	Mini Project	0	0	3	50	100	3	2
	<b>TOTAL</b>	<b>18</b>	<b>6</b>	<b>6</b>	<b>400</b>	<b>800</b>	<b>24</b>	<b>28</b>

*Sunny*  
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## SCHEME OF VII SEMESTER B.Tech COURSE

Code	Subject	Hours/Week			Marks		Duration of End Semester examination	Credits
		L	T	P/D	Internal	End Semester		
CS14 701	Design & Analysis of Algorithm	3	1	0	50	100	3	4
CS14 702	Cryptography & Network Security	3	1	0	50	100	3	4
CS14 703	Artificial Intelligence	3	1	0	50	100	3	4
CS14 704	Elective I	3	1	0	50	100	3	4
CS14 705	Elective II	3	1	0	50	100	3	4
CS14 706(P)	Compiler Lab	0	0	3	50	100	3	2
CS14 707(P)	Network Programming Lab	0	0	3	50	100	3	2
CS14 708(P)	Project	0	0	4	100	-	-	4
	<b>TOTAL</b>	<b>15</b>	<b>5</b>	<b>10</b>	<b>450</b>	<b>700</b>	<b>21</b>	<b>28</b>

*Anna*  
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## SCHEME OF VIII SEMESTER B.Tech COURSE

Code	Subject	Hours/Week			Marks		Duration of End Semester examination	Credits
		L	T	P/D	Internal	End Semester		
CS14 801	Computer Architecture & Parallel Processing	3	1	0	50	100	3	4
CS14 802	Distributed Systems	3	1	0	50	100	3	4
CS14 803	Data Mining and Warehousing	3	1	0	50	100	3	4
CS14 804	Elective III	3	1	0	50	100	3	4
CS14 805	Elective IV	3	1	0	50	100	3	4
CS14 806 (P)	Seminar	0	0	3	100	-	-	2
CS14 807 (P)	Project	0	0	7	150	-	-	4
CS14 808 (P)	Viva Voce	0	0	0	-	100	3	4
<b>TOTAL</b>		<b>15</b>	<b>5</b>	<b>10</b>	<b>500</b>	<b>600</b>	<b>18</b>	<b>30</b>

**Total Credits =210**

*Ammy*  
 DR. SUNNY JOSEPH KALAYATHANKAL  
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A CENTRE OF EXCELLENCE IN SCIENCE & TECHNOLOGY BY THE CATHOLIC ARCHDIOCESE OF TRICHUR

JYOTHI HILLS, VETTIKATTI P.O, CHERUTHURUTHY, THRISSUR, PIN-679531 PH : +91- 4884-259000, 274423 FAX : 04884-274777

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## CS14 704 Elective I

CS14 704 (A)	Object Oriented Modeling and Design
CS14 704 (B)	Digital Image Processing
CS14 704 (C)	Grid Computing
CS14 704 (D)	Queuing Theory
<b>CS14 704 (E)</b>	<b>Simulation and Modelling (Global)</b>

## CS14 705-Elective II

CS14 705(A)	Soft Computing
CS14 705(B)	E-Commerce
CS14 705(C)	Software Architecture and Project Management
CS14 705(D)	Advanced Data Structures
<b>CS14 705 (E)</b>	<b>Computer Based Numerical Methods (Global)</b>

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Jyothi Engineering College  
Cheruthuruthy P.O.- 679 531



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## CS14 804-Elective III

CS14 804 (A)	Advanced Topics in Operating Systems
CS14 804 (B)	Information Retrieval
CS14 804 (C)	Cyber Security
CS14 804 (D)	Mobile Computing
<b>CS14 804 (E)</b>	<b>Speech and Language Processing (Global)</b>

## CS14 805-Elective IV

CS14 805 (A)	Advanced Database Design
CS14 805 (B)	Cloud Computing
CS14 805 (C)	Machine Learning
CS14 805 (D)	Web Programming
<b>CS14 805 (E)</b>	<b>Pattern Recognition (Global)</b>

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## SYLLABUS & CURRICULUM

of

### B. Tech. ELECTRONICS & COMMUNICATION ENGINEERING (3<sup>rd</sup> to 8<sup>th</sup> semesters)

UNIVERSITY OF CALICUT  
(2014 admission)

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## SCHEME for Electronics and Communication Engineering (ECE) Branch for 3<sup>rd</sup> to 8<sup>th</sup> Semesters

### 3<sup>rd</sup> Semester

Code	Subject	Hours/week			Marks		Sem-end duration -hours	Credits
		L	T	P/D	Internal	Sem-end		
EN14 301	Engineering Mathematics III	3	1	-	50	100	3	4
EN14 302	Computer Programming in C	3	-	1	50	100	3	4
EC14 303	Network Analysis & Synthesis	3	1	-	50	100	3	4
EC14 304	Solid State Devices	3	1	-	50	100	3	4
EC14 305	Electronic Circuits I	3	1	-	50	100	3	4
EC14 306	Electrical Engg.	3	1	-	50	100	3	4
EC14 307 (P)	<i>Basic Electronics Lab</i>	-	-	3	50	100	3	2
EC14 308 (P)	<i>Electrical Engg.Lab</i>	-	-	3	50	100	3	2
	<b>Total</b>	<b>18</b>	<b>5</b>	<b>7</b>				<b>28</b>

**Note:** For EN14 302 Computer Programming in C, the end semester examination will be held by the University as a theory paper.

### 4<sup>th</sup> Semester

Code	Subject	Hours/week			Marks		Sem-end duration -hours	Credits
		L	T	P/D	Internal	Sem-end		
EN14 401B	Engineering Mathematics IV	3	1	-	50	100	3	4
EN14 402	Environmental Science	3	1	-	50	100	3	4
EC14 403	Signals and Systems	3	1	-	50	100	3	4
EC14 404	Electronic Circuits II	3	1	-	50	100	3	4
EC14 405	Digital Electronics	3	1	-	50	100	3	4
EC14 406	Analog Communication	3	1	-	50	100	3	4
EC14 407 (P)	<i>Digital Electronics Lab</i>	-	-	3	50	100	3	2
EC14 408 (P)	<i>Electronic Circuits Lab</i>	-	-	3	50	100	3	2
	<b>Total</b>	<b>18</b>	<b>6</b>	<b>6</b>				<b>28</b>

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## 5<sup>th</sup> Semester

Code	Subject	Hours/week			Marks		Sem-end duration -hours	Credits
		L	T	P/D	Internal	Sem-end		
EC14 501	Computer Organization & Architecture	3	1	-	50	100	3	4
EC14 502	Linear Integrated Circuits	3	1	-	50	100	3	4
EC14 503	Digital Communication	3	1	-	50	100	3	4
EC14 504	Electromagnetic Field Theory	3	1	-	50	100	3	4
EC14 505	Microprocessors and Microcontrollers	3	1	-	50	100	3	4
EC14 506	Quantitative Techniques & Managerial Decisions	3	1	-	50	100	3	4
EC14 507 (P)	<i>Analog Communication Lab</i>	-	-	3	50	100	3	2
EC14 508 (P)	<i>Linear Integrated Circuits Lab</i>	-	-	3	50	100	3	2
	<b>Total</b>	<b>18</b>	<b>6</b>	<b>6</b>				<b>28</b>

## 6<sup>th</sup> Semester

Code	Subject	Hours/week			Marks		Sem-end duration -hours	Credits
		L	T	P/D	Internal	Sem-end		
EC14 601	Radiation and Propagation	3	1	-	50	100	3	4
EC14 602	Optical Communication	3	1	-	50	100	3	4
EC14 603	VLSI design	3	1	-	50	100	3	4
EC14 604	Digital Signal Processing	3	1	-	50	100	3	4
EC14 605	Control Systems	3	1	-	50	100	3	4
EC14 606	Satellite Communication	3	1	-	50	100	3	4
EC14 607 (P)	<i>Microprocessors and Microcontrollers Lab</i>	-	-	3	50	100	3	2
EC14 608 (P)	<i>Mini Project</i>	-	-	3	50	100	3	2
	<b>Total</b>	<b>18</b>	<b>6</b>	<b>6</b>				<b>28</b>

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## 7<sup>th</sup> Semester

Code	Subject	Hours/week			Marks		Sem-end duration -hours	Credits
		L	T	P/D	Internal	Sem-end		
EC14 701	Information Theory and Coding	3	1	-	50	100	3	4
EC14 702	Microwave Engineering	3	1	-	50	100	3	4
EC14 703	Digital System Design	3	1	-	50	100	3	4
EC14 704	Elective I	3	1	-	50	100	3	4
EC14 705	Elective II	3	1	-	50	100	3	4
EC14 706 (P)	VLSI lab	-	-	3	50	100	3	2
EC14 707 (P)	Communication Systems lab	-	-	3	50	100	3	2
EC14 708 (P)	Project	-	-	4	100	-	-	4
	<b>Total</b>	<b>15</b>	<b>5</b>	<b>10</b>				<b>28</b>

### Elective I

- EC14 704(A) Internet Technology (Global)
- EC14 704(B) Television and Radar Engineering
- EC14 704(C) Embedded Systems
- EC14 704(D) Nanotechnology
- EC14 704(E) Image and Video Processing

### Elective II

- EC14 705(A) Soft Computing
- EC14 705(B) High Speed Digital Design
- EC14 705(C) Antenna Theory and Design
- EC14 705(D) Electronic Packaging(Global)
- EC14 705(E) Biomedical Instrumentation

## 8<sup>th</sup> Semester

Code	Subject	Hours/week			Marks		Sem-end duration -hours	Credits
		L	T	P/D	Internal	Sem-end		
EC14 801	Data and Communication Networks	3	1	-	50	100	3	4
EC14 802	Economics and Management	3	1	-	50	100	3	4
EC14 803	Wireless Mobile Communications	3	1	-	50	100	3	4
EC14 804	Elective III	3	1	-	50	100	3	4
EC14 805	Elective IV	3	1	-	50	100	3	4
EC14 806 (P)	Seminar	-	-	3	100	-	-	2
EC14 807 (P)	Project	-	-	7	100	-	-	4
EC14 808 (P)	Viva Voce	-	-	-	-	100	-	4
	<b>Total</b>	<b>15</b>	<b>5</b>	<b>10</b>				<b>30</b>

### Elective III

- EC14 804 (A) Introduction to MEMS
- EC14 804 (B) Photonic Switching and Network
- EC14 804 (C) Microwave Active Devices and Circuits
- EC14 804 (D) Mobile Computing
- EC14 804 (E) Data Structures and Algorithms (Global)

### Elective IV

- EC14 805 (A) Multimedia Communication Systems
- EC14 805 (B) Probability and Random Processes
- EC14 805 (C) Cryptography and Network security
- EC14 805 (D) Advanced Semiconductor Device Technology
- EC14 805 (E) Advanced Digital Signal Processing

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## SYLLABUS & CURRICULUM

of

**B.Tech.**

**ELECTRICAL & ELECTRONICS**  
**(3<sup>rd</sup> to 8<sup>th</sup> semesters)**

**UNIVERSITY OF CALICUT**

**(2014 admission)**

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## SCHEME for Electrical and Electronics Engineering (EEE) Branch for 3<sup>rd</sup> to 8<sup>th</sup> Semesters

### 3<sup>rd</sup> Semester

Code	Subject	Hours/week			Marks			
		L	T	P/D	Internal	Sem-end		
EN14 301	Engineering Mathematics III	3	1	-	50	100	3	4
EN14 302	Computer Programming in C	3	-	1	50	100	3	4
EE14 303	Electric Circuit Theory	3	1	-	50	100	3	4
EE14 304	Electrical Measurements & Instrumentation Systems	3	1	-	50	100	3	4
EE14 305	Analog Electronics	3	1	-	50	100	3	4
EE14 306	Mechanical Engineering	3	1	-	50	100	3	4
EE14 307(P)	Basic Electrical Engg Lab	-	-	3	50	100	3	2
EE14 308(P)	Electronics Lab	-	-	3	50	100	3	2
	<b>Total</b>	<b>18</b>	<b>5</b>	<b>7</b>				<b>28</b>

**Note:** For EN 14 302 Computer Programming in C, the end semester examination will be held by the University as a theory paper.

### 4<sup>th</sup> Semester

Code	Subject	Hours/week			Marks			
		L	T	P/D	Internal	Sem-end		
EN14 401B	Engineering Mathematics IV	3	1	-	50	100	3	4
EN14 402	Environmental Science	3	1	-	50	100	3	4
EE14 403	Electrical Machines I	3	1	-	50	100	3	4
EE14 404	Signals and Systems	3	1	-	50	100	3	4
EE14 405	Digital Electronics	3	1	-	50	100	3	4
EE14 406	Electromagnetic Field Theory	3	1	-	50	100	3	4
EE14 407(P)	Mechanical Engg. Lab	-	-	3	50	100	3	2
EE14 408(P)	Electrical Measurements & Instrumentation Lab	-	-	3	50	100	3	2
	<b>Total</b>	<b>18</b>	<b>6</b>	<b>6</b>				<b>28</b>

### 5<sup>th</sup> Semester

Code	Subject	Hours/week			Marks			
		L	T	P/D	Internal	Sem-end		
EE14 501	Power Electronics	3	1	-	50	100	3	4
EE14 502	Electrical Power Generation, Transmission and Distribution	3	1	-	50	100	3	4
EE14 503	Electrical Machines II	3	1	-	50	100	3	4
EE14 504	Analog & Digital Communication	3	1	-	50	100	3	4
EE14 505	Digital System Design	3	1	-	50	100	3	4
EE14 506	Electrical Material Science	3	1	-	50	100	3	4
EE14 507(P)	Electrical Machines Lab I	-	-	3	50	100	3	2
EE14 508(P)	Integrated Circuits Lab	-	-	3	50	100	3	2

Principal  
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College





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## 6<sup>th</sup> Semester

Code	Subject	Hours/week			Marks			
		L	T	P/D	Internal	Sem-end		
EE14 601	Engineering Economics and Principles of Management	3	1	-	50	100	3	4
EE14 602	Linear Control System	3	1	-	50	100	3	4
EE14 603	Electrical Machines III	3	1	-	50	100	3	4
EE14 604	Microprocessors and Microcontrollers	3	1	-	50	100	3	4
EE14 605	Digital Signal Processing	3	1	-	50	100	3	4
EE14 606	Numerical Analysis and Optimization Theory	3	1	-	50	100	3	4
EE14 607(P)	Electrical Machines Lab II	-	-	3	50	100	3	2
EE14 608(P)	Mini Project	-	-	3	50	100	3	2
	<b>Total</b>	<b>18</b>	<b>6</b>	<b>6</b>				<b>28</b>

## 7<sup>th</sup> Semester

Code	Subject	Hours/week			Marks			
		L	T	P/D	Internal	Sem-end		
EE14 701	Power System Analysis	3	1	-	50	100	3	4
EE14 702	Modern Control Theory	3	1	-	50	100	3	4
EE14 703	Electric Drives	3	1	-	50	100	3	4
EE14 704	Elective I	3	1	-	50	100	3	4
EE14 705	Elective II	3	1	-	50	100	3	4
EE14 706(P)	Power Electronics Lab	-	-	3	50	100	3	2
EE14 707(P)	System Simulation & Control Lab	-	-	3	50	100	3	2
EE14 708(P)	Project	-	-	4	100	-	-	4
	<b>Total</b>	<b>15</b>	<b>5</b>	<b>10</b>				<b>28</b>

### Elective I

- EE14 704(A) Switched Mode Power Converters
- EE14 704(B) Electrical Machine Design
- EE14 704(C) Generalised Machine Theory
- EE14 704(D) Mechatronics (G)
- EE14 704(E) VLSI Design

### Elective II

- EE14 705(A) Soft Computing Techniques (G)
- EE14 705(B) High Voltage Engineering
- EE14 705(C) Electric Power Utilisation
- EE14 705(D) Professional Ethics
- EE14 705(E) Management Information Systems
- EE14 705(F) Satellite Communication

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## 8<sup>th</sup> Semester

Code	Subject	Hours/week			Marks			
		L	T	P/D	Internal	Sem-end		
EE14 801	Electrical System Design	3	1	-	50	100	3	4
EE14 802	FACTS Controllers & Custom Power Devices	3	1	-	50	100	3	4
EE14 803	Power System Protection	3	1	-	50	100	3	4
EE14 804	Elective III	3	1	-	50	100	3	4
EE14 805	Elective IV	3	1	-	50	100	3	4
EE14 806(P)	Seminar	-	-	3	100	-	-	2
EE14 807(P)	Project	-	-	7	50	100	-	4
EE14 808(P)	Viva Voce	-	-	-	-	100	-	4
	<b>Total</b>	<b>15</b>	<b>5</b>	<b>10</b>				<b>30</b>

### Elective III

- EE14 804 (A) Power System Operation & Control
- EE14 804 (B) Biomedical Engineering(G)
- EE14 804 (C) Optimal Control Theory
- EE14 804 (D) Digital Image Processing
- EE14 804 (E) Robotics & Automation

### Elective IV

- EE14 805 (A) Special Electrical Machines
- EE14 805 (B) Digital Control Systems
- EE14 805 (C) Organisational Behaviour(G)
- EE14 805 (D) Instrumentation Systems
- EE14 805 (E) Embedded Systems
- EE14 805 (F) Process Control & Instrumentation

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## University of Calicut

### Syllabus: 3<sup>rd</sup> – 8<sup>th</sup> Semester

### B. Tech. - Mechanical Engineering 2014

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## Scheme of III Semester B. Tech Mechanical Engineering

Code	Subject	Hours/ Week			Marks		Duration of End Semester examination	Credits
		L	T	P/D	Internal	End Semester		
EN14 301	Engineering Mathematics III	3	1	0	50	100	3	4
EN14 302	Computer Programming in C	2	0	1	50	100	3	4
ME14 303	Fluid Mechanics	4	1	0	50	100	3	4
ME14 304	Mechanics of Solids	3	1	0	50	100	3	4
ME14 305	Electrical Technology	3	1	0	50	100	3	4
ME14 306	Metallurgy and Materials Science	3	1	0	50	100	3	4
ME14 307 (P)	Computer Assisted Machine Drawing	0	0	3	50	100	3	2
ME14 308 (P)	Electrical Technology Lab	0	0	3	50	100	3	2
TOTAL		18	5	7				28

### Note:

- For EN 14 302 Computer Programming in C, the end semester examination will be held by the University as a theory paper.
- Even though the subject ME14 307 (P) Computer Assisted Machine Drawing is considered as a practical, the end semester examination will be conducted by the University.

## Scheme of IV Semester B. Tech Mechanical Engineering

Code	Subject	Hours/ Week			Marks		Duration of End Semester examination	Credits
		L	T	P/D	Internal	End Semester		
EN14 401A	Engineering Mathematics IV	3	1	0	50	100	3	4
EN14 402	Environmental Science	2	1	0	50	100	3	4
ME14 403	Thermodynamics	4	1	0	50	100	3	4
ME14 404	Advanced Mechanics of Solids	3	1	0	50	100	3	4
ME14 405	Fluid Machinery	3	1	0	50	100	3	4
ME14 406	Casting and joining	3	1	0	50	100	3	4
ME14 407 (P)	Materials Testing Lab	0	0	3	50	100	3	2
ME14 408 (P)	Production Engineering Lab I	0	0	3	50	100	3	2
TOTAL		18	6	6				28

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# Jyothi Engineering College

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A CENTRE OF EXCELLENCE IN SCIENCE & TECHNOLOGY BY THE CATHOLIC ARCHDIOCESE OF TRICHUR



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## Scheme of V Semester B. Tech Mechanical Engineering

Code	Subject	Hours/ Week			Marks		Duration of End Semester examination	Credits
		L	T	P/D	Internal	End Semester		
ME14 501*	Engineering Economics and Principles of Management*	3	1	0	50	100	3	4
ME14 502	Metal Cutting and Forming	2	1	0	50	100	3	4
ME14 503	Heat and Mass Transfer	4	1	0	50	100	3	4
ME14 504	Thermal Engineering	3	1	0	50	100	3	4
ME14 505	Mechanics of Machinery	3	1	0	50	100	3	4
ME14 506	Finite Element Methods	3	1	0	50	100	3	4
ME14 507 (P)	Fluids Lab	0	0	3	50	100	3	2
ME14 508 (P)	Production Engineering lab II	0	0	3	50	100	3	2
TOTAL		18	6	6				28

\*Common for ME, AI, CE, CS, EC, EE, BM and IC

## Scheme of VI Semester B. Tech Mechanical Engineering

Code	Subject	Hours/ Week			Marks		Duration of End Semester examination	Credits
		L	T	P/D	Internal	End Semester		
ME14 601	Refrigeration and Air Conditioning	3	1	0	50	100	3	4
ME14 602	Metrology and Instrumentation	2	1	0	50	100	3	4
ME14 603	Dynamics of Machinery	4	1	0	50	100	3	4
ME14 604	Machine Design I	3	1	0	50	100	3	4
ME14 605	Operations Research	3	1	0	50	100	3	4
ME14 606	Computational Methods in Engineering	3	1	0	50	100	3	4
ME14 607 (P)	Thermal Lab I	0	0	3	50	100	3	2
ME14 608 (P)	CAD/CAM Lab	0	0	3	50	100	3	2
TOTAL		18	6	6				28

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## Scheme of VII Semester B. Tech Mechanical Engineering

Code	Subject	Hours/ Week			Marks		Duration of End Semester examination	Credits
		L	T	P/D	Internal	End Semester		
ME14 701	Mechatronics	3	1	0	50	100	3	4
ME14 702	Gas Dynamics & Jet Propulsion	3	1	0	50	100	3	4
ME14 703	Computer Integrated Manufacturing	3	1	0	50	100	3	4
ME14 704	Elective I	3	1	0	50	100	3	4
ME14 705	Elective II	3	1	0	50	100	3	4
ME14 706 (P)	Thermal Lab II	0	0	3	50	100	3	2
ME14 707 (P)	Instrumentation Lab	0	0	3	50	100	3	2
ME14 708 (P)	Project	0	0	4	100	-	-	4
	TOTAL	15	5	10				28

## Scheme of VIII Semester B. Tech Mechanical Engineering

Code	Subject	Hours/ Week			Marks		Duration of End Semester examination	Credits
		L	T	P/D	Internal	End Semester		
ME14 801	Machine Design II	4	1	0	50	100	3	4
ME14 802	Power Plant Engineering	3	1	0	50	100	3	4
ME14 803	Operations Management	2	1	0	50	100	3	4
ME14 804	Elective III	3	1	0	50	100	3	4
ME14 805	Elective IV	3	1	0	50	100	3	4
ME14 806 (P)	Seminar	0	0	3	100	-	-	2
ME14 807 (P)	Project	0	0	7	100	-	-	5
ME14 808 (P)	Viva Voce	0	0	0	-	100	-	3
	TOTAL	15	5	10				30

Total Credits =212

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## ELECTIVES

### ELECTIVE I

ME14 704(A)	Financial Management
ME14 704(B)	Industrial Safety Engineering
ME14 704(C)	Heating Ventilation and Air Conditioning Design
ME14 704(D)	Energy Conservation in Thermal Systems
ME14 704(E)	Industrial Automation
ME14 704(F)	Combustion Engineering
ME 14 704(G)	Automobile Engineering

### ELECTIVE II

ME14 705(A)	Logistics and Supply Chain Management
ME14 705(B)	Design of Heat Transfer Equipments
ME14 705(C)	Computational Fluid Dynamics
ME14 705(D)	Design of Jigs and Fixtures
ME14 705(E)	Fracture Mechanics
ME14 705(F)	Composite Materials

### ELECTIVE III

ME14 804(A)	Marketing Management
ME14 804(B)	Aerospace Engineering
ME14 804(C)	Energy Engineering and Management
ME14 804(D)	Cryogenic Engineering
ME14 804(E)	Control System Engineering
ME14 804(F)	Industrial Tribology
ME14 804(G)	Wind Energy and its utilization

### ELECTIVE IV

ME14 805(A)	Quality Engineering and Management
ME14 805(B)	Renewable Energy Technology (Global)
ME14 805(C)	Advanced Fluid Mechanics
ME14 805(D)	Computerized Materials Management
ME14 805(E)	Design of Pressure Vessels and Piping
ME14 806(F)	Industrial Maintenance
ME14 806(G)	Tool Engineering and Design

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CREATING TECHNOLOGY  
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## KERALA TECHNOLOGICAL UNIVERSITY



**(PALAKKAD CLUSTER - 08)**

Proposed Scheme and Syllabus For

**M. Tech.**

in

**POWER ELECTRONICS**

**(2015 Admission onwards)**

*[Signature]*  
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## OFFERING DEPARTMENT

# ELECTRICAL & ELECTRONICS ENGINEERING

## Scheme of M. Tech Programme in POWER ELECTRONICS

### Semester 1 (Credits: 22)

Exam Slot	Course No:	Name	L - T - P	Internal Marks	End Semester Exam		Credits
					Marks	Duration (hrs.)	
A	08EE6211	Applied Mathematics	3-0-0	40	60	3	3
B	08EE6221	System Dynamics	3-0-0	40	60	3	3
C	08EE6231	Analysis of Power Electronic Circuits I	4-0-0	40	60	3	4
D	08EE6241	Electric Drives	3-0-0	40	60	3	3
E	08EE6251	ELECTIVE I	3-0-0	40	60	3	3
	08GN6001	Research methodology	0-2-0	100	0	0	2
	08EE6271	Seminar	0-0-2	100	0	0	2
	08EE6281	Power Electronics Lab	0-0-2	100	0	0	2

### ELECTIVES

- 08EE6251(A) Power Semiconductor Devices & Modeling
- 08EE6251 (B) Dynamics of electrical machines
- 08EE6251 (C) Optimization Techniques
- 08EE6251 (D) High voltage AC and DC Transmission

Note: 8 hours/week is meant for departmental assistance by students.

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## Semester 2 (Credits:19)

Exam Slot	Course No:	Name	L - T - P	Internal Marks	End Semester Exam		Credits
					Marks	Duration (hrs.)	
A	08EE6212	Analysis of Power Electronic Circuits II	3-1-0	40	60	3	3
B	08EE6222	Switched Mode power Converters	3-0-0	40	60	3	3
C	08EE6232	Advanced Electric Drives	3-0-0	40	60	3	3
D	08EE6242	ELECTIVE II	3-0-0	40	60	3	3
E	08EE6252	ELECTIVE III	3-0-0	40	60	3	3
	08EE6262	Mini Project	0-0-2	100	0	0	2
	08EE6272	Advanced Power Electronics Lab	0-0-2	100	0	0	2

### ELECTIVE II

08EE6242 (A) Facts and Custom Power Devices

08EE6242 (B) Power Quality

08EE6242 (C) Digital Simulation of Power electronic Systems

### ELECTIVE III

08EE6252(A) Embedded Controllers and Real Time systems

08EE6252 (B) DSP and Applications

08EE6252(C) Digital Control Systems

Note: 8 hours / week is meant for departmental assistance by students.

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## Semester 3 (Credits: 14)

Exam Slot	Course No:	Name	L - T - P	Internal Marks	End Semester Exam		Credits
					Marks	Duration (hrs.)	
A	08EE7211	ELECTIVE IV	3-0-0	40	60	3	3
B	08EE7221	ELECTIVE V	3-0-0	40	60	3	3
	08EE7231	Seminar	0-0-2	100	0	0	2
	08EE7241	Project (Phase I)	0-0-12	50	0	0	6

### ELECTIVE IV

- 08EE7211 (A) Special Electric machines and Drives
- 08EE7211 (B) Industrial Instrumentation
- 08EE7211 (C) Non linear control systems

### ELECTIVE V

- 08EE7221 (A) Soft computing techniques
- 08EE7221 (B) Design of Power electronic systems
- 08EE7221(C) Renewable energy technologies

Note: The students has to undertake the departmental work assigned by HOD

## Semester 4 (Credits : 12)

Exam Slot	Course No:	Name	L - T - P	Internal Marks	End Semester Exam		Credits
					Marks	Duration (hrs.)	
	08EE7212	Project (Phase II)	0-0-21	70	30	0	12

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**Total credits:66**



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## Master of Technology

### Curriculum, Syllabus and Course Plan

## PALAKKAD CLUSTER - 08 SCHEME AND SYLLABI

FOR

## M. Tech. DEGREE PROGRAMME

IN

### COMPUTER SCIENCE AND ENGINEERING (2015 ADMISSION ONWARDS)

Sl. No.	Course Code	Course Name	Credits	Prerequisites
1	MT01	Advanced System Design	3	OS, DS, AI
2	MT02	Advanced Database Management Systems	3	OS, DS, AI
3	MT03	Advanced Artificial Intelligence	3	OS, DS, AI
4	MT04	Advanced Data Mining	3	OS, DS, AI
5	MT05	Advanced Cyber Security	3	OS, DS, AI
<b>TOTAL</b>				

TOTAL CREDITS: 15  
TOTAL CONTACT HOURS: 300

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## SEMESTER 1

Examination Slot	Course Number	Name	L-T-P	Internal Marks	End Semester Examination		Credits
					Marks	Duration (hours)	
A	08 CS 6011	Operating System Design	4-0-0	40	60	3	4
B	08 CS 6021	Advanced Data Structures	3-0-0	40	60	3	3
C	08 CS 6031	Advanced Database Technology	3-0-0	40	60	3	3
D	08 CS 6041	Mathematical Foundations of Computer Science	3-0-0	40	60	3	3
E	08 CS 6051	Elective I	3-0-0	40	60	3	3
S	08 GN 6001	Research Methodology	0-2-0	100			2
T	08 CS 6071(P)	Seminar I	0-0-2	100			2
U	08 CS 6081(P)	Advanced Data Structures Lab	0-0-2	100			2
		<b>TOTAL</b>	<b>16-2-4</b>	<b>500</b>	<b>300</b>	<b>-</b>	<b>22</b>

Note: Remaining 8 hours / week is meant for departmental assistance by students

**TOTAL CONTACT HOURS : 22**

**TOTAL CREDITS : 22**

### Elective I

- 08 CS 6051(A) Computational Intelligence
- 08 CS 6051(B) Advanced Network Technologies
- 08 CS 6051(C) Web Services

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## SEMESTER 2

Examination Slot	Course Number	Name	L-T-P	Internal Marks	End Semester Examination		Credits
					Marks	Duration (hours)	
A	08 CS 6012	Advanced Compiler Design	4-0-0	40	60	3	4
B	08 CS 6022	Information Retrieval	3-0-0	40	60	3	3
C	08 CS 6032	Evolutionary Computing	3-0-0	40	60	3	3
D	08 CS 6042	Elective II	3-0-0	40	60	3	3
E	08 CS 6052	Elective III	3-0-0	40	60	3	3
V	08 CS 6062(P)	Mini Project	0-0-4	100			2
U	08 CS 6072 (P)	Data mining and Analytics Lab	0-0-2	100			1
		<b>TOTAL</b>	<b>16-0-6</b>	<b>400</b>	<b>300</b>	<b>-</b>	<b>19</b>

Note: Remaining 8 hours / week is meant for departmental assistance by students


**TOTAL CONTACT HOURS : 22**  
**TOTAL CREDITS : 19**

### Elective II

- 08 CS 6042(A) Advanced Language Technologies
- 08 CS 6042(B) Big Data Essentials
- 08 CS 6042(C) Algorithms and Complexity
- 08 CS 6042(D) Software Architecture and Design

### Elective III

- 08 CS 6052(A) Cloud Computing
- 08 CS 6052(B) Data Compression
- 08 CS 6052(C) Bioinformatics

  
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## SEMESTER 3

Examination Slot	Course Number	Name	L-T-P	Internal Marks	End Semester Examination		Credits
					Marks	Duration (hours)	
A	08 CS 7011	Elective IV	3-0-0	40	60	3	3
B	08 CS 7021	Elective V	3-0-0	40	60	3	3
T	08 CS 7031(P)	Seminar II	0-0-2	100			2
W	08 CS 7041(P)	Masters Research Project Phase 1	0-0-12	50			0
<b>TOTAL</b>			<b>6-0-14</b>	<b>230</b>	<b>120</b>	<b>-</b>	<b>8</b>

Note: Remaining 10 hours / week is meant for departmental assistance by students

**TOTAL CONTACT HOURS** : 20  
**TOTAL CREDITS** : 8

### Elective IV

- 08 CS 7011(A) Unix Internals
- 08 CS 7011(B) Crypto Complexity
- 08 CS 7011(C) Ethical Hacking

### Elective V

- 08 CS 7021(A) Theoretical Computer Science
- 08 CS 7021(B) Semantic Web
- 08 CS 7021(C) Advanced Architecture

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## SEMESTER 4

Examination Slot	Course Number	Name	L-T-P	Internal Marks	End Semester Examination		Credit
					Marks	Duration (hours)	
W	08 CS 7012(P)	Masters Research Project Phase 2	0-0-21	70	30		18
		<b>TOTAL</b>	<b>0-0-21</b>	<b>70</b>	<b>30</b>	<b>-</b>	<b>18</b>

TOTAL CONTACT HOURS : 21  
TOTAL CREDITS : 18

**TOTAL NUMBER OF CREDITS: 67**

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## APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Sl. No.	Course Name	Level	Mode	Duration	Start Date	End Date	Exam Mode
18	M.Tech. Transportation Engineering	PG	Full Time	2 Years	2021-22	2023-24	W
19	M.Tech. Transportation Engineering	PG	Part Time	2 Years	2021-22	2023-24	W



(PALAKKAD CLUSTER - 08)

**SCHEME AND SYLLABI**

**M. TECH. PROGRAMME**

in

**TRANSPORTATION ENGINEERING**

**DEPARTMENT OF CIVIL ENGINEERING**

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M.Phil, B.Ed  
Ph.D (Maths)  
Principal  
Jyothi Engineering College  
Cheruthuruthy P.O., Trichur

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## Scheme of M. Tech Programme in Transportation Engineering

Cluster : 08-Palakkad  
 Branch : Civil Engineering  
 Stream : Transportation Engineering  
 Year : 2015 (Programme started in 2017)  
 No. of Credits : 67

### Allotment of credits and examination scheme

L-Lecture T-Tutorial P-Practical

#### SEMESTER I

Examination slot	Course Number	Name	L-T-P	Internal marks	End semester exam		Credits
					Marks	Duration (Hrs)	
A	08MA6201	APPLIED STATISTICS AND PROBABILITY	3-1-0	40	60	3	3
B	08CE6201	FUNDAMENTALS OF TRAFFIC ENGINEERING	3-0-0	40	60	3	3
C	08CE6203	PAVEMENT ANALYSIS AND DESIGN	3-0-0	40	60	3	4
D	08CE6205	URBAN TRANSPORTATION	3-1-0	40	60	3	3
E	08CE62XX	ELECTIVE I	3-0-0	40	60	3	3
	08GN6001	RESEARCH METHODOLOGY	0-2-0	100	0	0	2
	08CE6291	SEMINAR -I	0-0-2	100	0	0	2
	08CE6293	PAVEMENT ENGINEERING LAB	0-0-2	100	0	0	2
		TOTAL	23	500	300	15	22

Total Contact

Hours: 23 Total

Credits: 22

**Note:** Remaining hours for departmental assistance by students.

#### ELECTIVE I

- 08 CE6211 AIRPORT INFRASTRUCTURE PLANNING AND DESIGN
- 08 CE6213 MASS TRANSPORT PLANNING
- 08 CE6215 ROAD SAFETY ENGINEERING
- 08 CE6217 GROUND EXPLORATION TECHNIQUES

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 Jyothi Engineering College  
 Cheruthuruthy P.O.- 679 531





# Jyothi Engineering College

NAAC Accredited College with NBA Accredited Programmes\*

Approved by AICTE & affiliated to APJ Abdul Kalam Technological University

A CENTRE OF EXCELLENCE IN SCIENCE & TECHNOLOGY BY THE CATHOLIC ARCHDIOCESE OF TRICHUR

JYOTHI HILLS, VETTIKATTIRI P.O, CHERUTHURUTHY, THRISSUR, PIN-679531 PH : +91- 4884-259000, 274423 FAX : 04884-274777



NBA-accredited B.Tech Programme in Computer Science & Engineering, Electronics & Communication Engineering, Electrical & Electronics Engineering and Mechanical Engineering valid for the academic years 2019-2022. NAAC Accredited B.Tech Programme in CMI Engineering valid for the academic years 2019-2022.

Class :  
Branch :  
Semester :  
Year :  
No of Credits :

Allocation of credits and examination scheme

Level : B.Tech - I Semester - B-Technical

### SEMESTER I

Sl. No	Exam. Number	Course Name	L-T-P	Internal marks	End semester exam	
					Mark's	Duration (hrs)
1	ORCE6501	APPLIED STATISTICS AND PROBABILITY	3-0-0	40	80	3
2	ORCE6501	FUNDAMENTALS OF TRAFFIC ENGINEERING	3-0-0	40	80	3
3	ORCE6503	PAVEMENT ANALYSIS AND DESIGN	3-0-0	40	80	3
4	ORCE6505	URBAN TRANSPORTATION	3-0-0	40	80	3
5	ORCE6507	ELECTIVE I	3-0-0	40	80	3
6	ORCE6501	RESEARCH METHODOLOGY	0-0-3	100	0	0
7	ORCE6501	SEMINAR I	0-0-3	100	0	0
8	ORCE6503	PAVEMENT ENGINEERING - I	0-0-3	100	0	0
9		TOTAL		200	300	12

Total Contact Hours: 12

Hours: 12

Credits: 12

Note: Remaining hours for departmental seminars by students

RELECTIVE

- FOR CREDIT SUPPORT INFRASTRUCTURE PLANNING AND DESIGN
- FOR CREDIT SUPPORT INFRASTRUCTURE PLANNING
- FOR CREDIT SUPPORT INFRASTRUCTURE ENGINEERING
- FOR CREDIT SUPPORT INFRASTRUCTURE ENGINEERING

KALAYATHA  
B.E. M.Phil. B.Ed.  
Principal  
Jyothi Engineering College  
Cheruthuruthy  
Thrissur



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Examination slot	Course Number	Name	L-T-P	Internal marks	End semester exam		Credits
					Marks	Duration (Hrs)	
A	08CE6202	REGIONAL TRANSPORTATION PLANNING	3-0-0	40	60	3	3
B	08CE6204	PAVEMENT CONSTRUCTION, EVALUATION AND MAINTENANCE	3-0-0	40	60	3	3
C	08CE6206	ADVANCED TRAFFIC ENGINEERING	3-0-0	40	60	3	3
D	08CE62XX	ELECTIVE II	3-0-0	40	60	3	3
E	08CE62YY	ELECTIVE III	3-0-0	40	60	3	3
	08CE6292	MINI PROJECT	0-0-4	100			2
	08CE6294	TRANSPORTATION ENGINEERING LAB	0-0-2	100			2
		TOTAL	21	400	300	15	19

**Total Contact**

**Hours: 21 Total**

**Credits: 19**

**Note:** Remaining hours for departmental assistance by students.

### ELECTIVE II

- 08CE6212 GEOSYNTHETICS FOR HIGHWAY DESIGN
- 08CE6214 GIS AND ITS APPLICATIONS IN TRANSPORTATION ENGINEERING
- 08CE6216 OPERATIONS RESEARCH
- 08CE6218 TUNNEL ENGINEERING
- 08CE6220 PLANNING AND DESIGN OF FREIGHT TRANSPORTATION

### ELECTIVE III

- 08CE6222 ADVANCED SOIL MECHANICS
- 08CE6224 INTELLIGENT TRANSPORTATION SYSTEM
- 08CE6226 PROJECT MANAGEMENT
- 08CE6228 ADVANCED TRAVEL DEMAND MODELING
- 08CE6230 PLANNING AND DESIGN OF NON-MOTORISED TRANSPORTATION

*Romy*  
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Examination slot	Course Number	Name	L-T-P	Internal marks	End semester exam		Credits
					Marks	Duration (Hrs)	
A	08CE72XX	ELECTIVE IV	3-0-0	40	60	3	3
B	08CE72YY	ELECTIVE V	3-0-0	40	60	3	3
	08CE7291	SEMINAR II	0-0-2	100	0	0	2
	08CE7293	PROJECT (PHASE 1)	0-0-12	50	0	0	0
		TOTAL	20	230	120	6	8

Total Contact

Hours: 20 Total

Credits: 8

**Note:** Remaining hours for departmental assistance by students.

### ELECTIVE IV

- 08CE7201 HIGHWAY GEOMETRIC DESIGN
- 08CE7203 PAVEMENT EVALUATION AND MANAGEMENT
- 08CE7205 SOFT COMPUTING TOOLS
- 08CE7207 WATERWAYS INFRASTRUCTURE PLANNING AND DESIGN
- 08CE7209 LAND USE TRANSPORTATION PLANNING

### ELECTIVE V

- 08CE7211 SUSTAINABLE TRANSPORTATION
- 08CE7213 TRANSPORTATION ECONOMICS
- 08CE7215 TRANSPORTATION SYSTEM MANAGEMENT
- 08CE7217 RAILWAY INFRASTRUCTURE PLANNING AND DESIGN
- 08CE7219 LOW VOLUME ROADS

### SEMESTER IV

Examination slot	Course Number	Name	L-T-P	Internal marks	End semester exam		Credits
NA	08CE7294	PROJECT (PHASE 2)	0-0-21	70	30	NA	18
		TOTAL	21				18

Total Contact

Hours: 21 Total

Credits: 18

**Note:** Remaining hours for departmental assistance by students.  
Total Credits for the Course: 67

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## KERALA TECHNOLOGICAL UNIVERSITY (PALAKKAD CLUSTER)

### PROPOSED DRAFT OF SCHEME AND SYLLABI FOR

M.Tech

in

### COMMUNICATION ENGINEERING AND SIGNAL PROCESSING

(ELECTRONICS AND COMMUNICATION  
ENGINEERING)

(2015 Admission onwards)

  
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**Scheme of M.Tech Programme in  
Communication Engineering and Signal Processing**





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NBA accredited B.Tech Programmes in Computer Science & Engineering, Electronics & Communication Engineering, Electrical & Electronics Engineering and Mechanical Engineering valid for the academic years 2019-2022. Internal Evaluation for all the Subjects

Internal Assessment (40 Marks)

Two Tests – 15 Marks each

Tutorials, Assignments – 10 Marks

End Semester Examination – 60 Marks

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## (Electronics and Communication Engineering)

### SEMESTER-I

Sl NO	Exam Slot	Course Code	Subject	Hours/Week			ICA	ESE		Credits
				L	T	P		Marks	Duration (Hrs)	
1	A	08 EC 6211	Mathematics for Communication Engineering	3	0	0	40	60	3	3
2	B	08 EC 6221	Advanced Digital Communication	3	0	0	40	60	3	3
3	C	08 EC 6231	Advanced Digital Signal Processing	3	0	0	40	60	3	3
4	D	08 EC 6241	Design of Digital Signal Processing Systems	3	0	0	40	60	3	3
5	E	08 EC 6251	Elective-I	3	0	0	40	60	3	3
6		GN 6001	Research Methodology	0	2	0	100	0	0	2
7		08 EC 6271 (P)	Seminar	0	0	2	100	0	0	2
8		08 EC 6281 (P)	Signal Processing Lab	0	0	2	100	0	0	2
Total				15	2	4	500	300		21

#### ELECTIVE I

08 EC 6251 (A): Information Theory

08 EC 6251 (B): Adaptive Signal Processing

08 EC 6251 (C): VLSI Circuits for Signal Processing

08 EC 6251 (D): Digital Image Processing

Note: 9 hours/week is meant for departmental assistance by students.

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## SEMESTER-II

Sl No.	Exam Slot	Course Code	Subject	Hours/Week			ICA	ESE		Credits
				L	T	P		Marks	Duration (Hrs)	
1	A	08 EC 6212	Wireless Communication	3	0	0	40	60	3	3
2	B	08 EC 6222	Estimation and Detection	3	0	0	40	60	3	3
3	C	08 EC 6232	Coding Theory	3	0	0	40	60	3	3
4	D	08 EC 6242	Elective-II	3	0	0	40	60	3	3
5	E	08 EC 6252	Elective-III	3	0	0	40	60	3	3
6		08 EC 6262(P)	Mini Project	0	0	4	100	0	0	2
7		08 EC 6272(P)	Advanced Communication Lab	0	0	2	100	0	0	2
Total				15	0	6	400	300		19

### LECTIVE II

08 EC 6242 (A): Multirate Signal Processing and Filter Banks

08 EC 6242 (B): Spectral Analysis of Signals

08 EC 6242 (C): Spread Spectrum and CDMA Systems

08 EC 6242 (D): Markov Modeling and Queuing Theory

### ELECTIVE III

08 EC 6252 (A): Communication Switching Theory

08 EC 6252 (B): Wavelets

08 EC 6252 (C): Communication Networks

08 EC 6252 (D): System Design Using Embedded Processors

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## SEMESTER III

Sl NO	Exam Slot	Course Code	Subject	Hours/Week			ICA	ESE		Credits
				L	T	P		Marks	Duration (Hrs)	
1	A	08 EC 7211	Elective-IV	3	0	0	40	60	3	3
2	B	08 EC 7221	Elective-V	3	0	0	40	60	3	3
		08 EC 7231(P)	Seminar	0	0	2	100	0	0	2
		08 EC 7241(P)	Project (Phase-I)	0	0	8	50	0	0	6
Total				6	0	10	230	120	0	14

L Lecture; T Tutorial; P Practical; ICA Internal Continuous Assessment; ESE End Semester Examination

### ELECTIVE IV

08 EC 7211 (A): Signal Compression – Theory and Methods

08 EC 7211 (B): Speech and AudioProcessing

08 EC 7211 (C): Biomedical Signal Processing

08 EC 7211 (D): DSP Algorithms and Architectures

### ELECTIVE V

08 EC 7221 (A): Linear Systems Theory

08 EC 7221 (B): Linear and Nonlinear Optimization

08 EC 7221 (C): Transform Theory

08 EC 7221 (D): Information Hiding and Data Encryption

Note: The student has to undertake the departmental work assigned by HOD

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## SEMESTER-IV

Sl NO	Course Code	Subject	Hours/Week			ICA	ESE		Credits
			L	T	P		Marks	Duration (Hrs)	
1	08 EC 7212(P)	Project (Phase-II)	0	0	21	100	0	0	12

L Lecture; T Tutorial; P Practical; ICA Internal Continuous Assessment; ESE End Semester Examination

Note: The student has to undertake the departmental work assigned by HOD

## GRAND TOTAL FOR ALL SEMESTERS

Total credits **66**  
Total Marks **1950**

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KERALA TECHNOLOGICAL UNIVERSITY

## Curriculum for Semesters I and II

2015

Kerala Technological University  
CET Campus, Thiruvananthapuram  
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Phone +91 471 2598122, 2598422  
Fax +91 471 2598522  
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## SEMESTER I

Slot	Course No.	Subject	L-T-P	Hours	Credits
A	MA101	Calculus	3-1-0	4	4
B (1/2)	PH100	Engineering Physics	3-1-0	4	4
	CY100	Engineering Chemistry	3-1-0	4	4
C (1/2)	BE100	Engineering Mechanics	3-1-0	4	4
	BE110	Engineering Graphics	1-1-2	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/ CS110/CH110	Basic Engineering Workshops	0-0-2	2	1
		(CS110 for CS and related branches and CH110 for CH and related branches only)	+ 0-0-2	2	1
U		U100 Language lab/ Bridge courses/ Remedial programmes/Micro Projects etc	0-0-3	3	
				<b>30</b>	<b>24/23</b>
V		V100 Entrepreneurship/TBI/NCC/NSS/ Physical Edn. etc	0-0-2	2	Activity points

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## Notes:

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

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

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

Civil Engineering

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

Aeronautical Engineering, Automobile Engineering, Food Technology, Industrial Engineering, 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

*Ashwath*  
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CREATING TECHNOLOGY  
LEADERS OF TOMORROW  
1990-2000

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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.

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# Jyothi Engineering College

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Approved by AICTE & affiliated to APJ Abdul Kalam Technological University

A CENTRE OF EXCELLENCE IN SCIENCE & TECHNOLOGY BY THE CATHOLIC ARCHDIOCESE OF TRICHUR

JYOTHI HILLS, VETIKATTIRI P.O, CHERUTHURUTHY, THRISSUR. PIN-679531 PH : +91- 4884-259000, 274423 FAX : 04884-274777

NBA accredited B.Tech Programmes in Computer Science & Engineering, Electronics & Communication Engineering, Electrical & Electronics Engineering and Mechanical Engineering valid for the academic years 2016-2022. NBA accredited B.Tech Programme in Civil Engineering valid for the academic years 2019-2022.



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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## SEMESTER II

Slot	Course No.	Subject	L-T-P	Hours	Credits
A	MA102	Differential Equations	3-1-0	4	4
B (1/2)	PH100	Engineering Physics	3-1-0	4	4
	CY100	Engineering Chemistry	3-1-0	4	4
C (1/2)	BE100	Engineering Mechanics	3-1-0	4	4
	BE110	Engineering Graphics	1-1-2	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
T (2/4)	CE110/ME110/ EE110/EC110	Basic Engineering Workshops	0-0-2	2	1
			+		
			0-0-2	2	1
U		U100 Language lab / Bridge courses/ Remedial programmes/Micro Projects etc	0-0-2	2	
				30	24/23
V		V100 Entrepreneurship /TBI/NCC/NSS/ Physical Edn. etc	0-0-2	2	Activity points

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

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ESTD 2002

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APJ ABDUL KALAM  
TECHNOLOGICAL  
UNIVERSITY

## APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

### Curriculum

for

### B.Tech Degree

### Semesters III to VIII

2016

Estd.

2014

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## BRANCH: Civil Engineering

### SEMESTER - 3

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

Total Credits = 24

Hours: 28/29

Cumulative Credits= 71

### SEMESTER - 4

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

Total Credits = 23

Hours 28/27

Cumulative Credits= 94

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## SEMESTER - 3

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

Total Credits = 23

Hours: 28

Cumulative Credits= 117

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

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## SEMESTER - 6

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

**Total Credits = 23**

**Hours:27**

**Cumulative Credits= 140**

**Elective 2:-**

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

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## SEMESTER - 7

Course Code	Course Name	L-T-P	Credits	Exam Slot
CE401	Design of Steel Structures	4-0-0	4	A
CE403	Structural Analysis- III	3-0-0	3	B
CE405	Environmental Engineering- I	3-0-0	3	C
CE407	Transportation Engineering -II	3-0-0	3	D
CE409	Quantity Surveying and Valuation	3-0-0	3	E
	<b>Elective 3</b>	3-0-0	3	F
CE451	Seminar & Project Preliminary	0-1-4	2	S
CE431	Environmental Engineering Lab	0-0-3	1	T
<b>Total Credits = 22</b>		<b>Hours: 27</b>	<b>Cumulative Credits= 162</b>	

### Elective 3:-

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

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## SEMESTER - 8

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

**Total Credits = 18**

**Hours: 30**

**Cumulative Credits= 180**

### Elective 4:-

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

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## BRANCH: Computer Science & Engineering

### SEMESTER - 3

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA201	Linear Algebra & Complex Analysis	3-1-0	4	A
CS201	Discrete Computational Structures	3-1-0	4	B
CS203	Switching Theory and Logic Design	3-1-0	4	C
CS205	Data Structures	3-1-0	4	D
CS207	Electronics Devices & Circuits	3-0-0	3	E
HS210/ HS200	Life Skills/Business Economics	3-0-0/ 2-0-2	3	F
CS231	Data Structures Lab	0-0-3	1	S
CS233	Electronics Circuits Lab	0-0-3	1	T

Total Credits = 24

Hours: 28/29

Cumulative Credits= 71

### SEMESTER - 4

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA202	Probability Distributions, Transforms and Numerical Methods	3-1-0	4	A
CS202	Computer Organization and Architecture	3-1-0	4	B
CS204	Operating Systems	3-1-0	4	C
CS206	Object Oriented Design and Programming	2-1-0	3	D
CS208	Principles of Database Design	2-1-0	3	E
HS210/ HS200	Life Skills/Business Economics	3-0-0/ 2-0-2	3	F
CS232	Free and Open Source Software Lab	0-0-3	1	S
CS234	Digital Systems Lab	0-0-3	1	T

Total Credits = 23

Hours 28/27

Cumulative Credits= 94

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## SEMESTER - 5

Course Code	Course Name	L-T-P	Credits	Exam Slot
CS301	Theory of Computation	3-1-0	4	A
CS303	System Software	2-1-0	3	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	T
CS333	Application Software Development Lab	0-0-3	1	U

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

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## SEMESTER - 6

Course Code	Course Name	L-T-P	Credits	Exam Slot
CS302	Design and Analysis of Algorithms	3-1-0	4	A
CS304	Compiler Design	3-0-0	3	B
CS306	Computer Networks	3-0-0	3	C
CS308	Software Engineering and Project Management	3-0-0	3	D
HS300	Principles of Management	3-0-0	3	E
	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

Cumulative Credits= 140

### Elective 2:-

1. CS362 Computer Vision
2. CS364 Mobile Computing
3. CS366 Natural Language Processing
4. CS368 Web Technologies
5. CS372 High Performance Computing

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## SEMESTER - 7

Course Code	Course Name	L-T-P	Credits	Exam Slot
CS401	Computer Graphics	4-0-0	4	A
CS403	Programming Paradigms	3-0-0	3	B
CS405	Computer System Architecture	3-0-0	3	C
CS407	Distributed Computing	3-0-0	3	D
CS409	Cryptography and Network Security	3-0-0	3	E
	<b>Elective 3</b>	3-0-0	3	F
CS451	Seminar & Project Preliminary	0-1-4	2	S
CS431	Compiler Design Lab	0-0-3	1	T

**Total Credits = 22**

**Hours: 27**

**Cumulative Credits= 162**

### Elective 3:-

1. CS461 Computational Geometry
2. CS463 Digital Image Processing
3. CS465 Bio Informatics
4. CS467 Machine Learning
5. CS469 Computational complexity

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## SEMESTER - 8

Course Code	Course Name	L-T-P	Credits	Exam Slot
CS402	Data Mining and Ware Housing	3-0-0	3	A
CS404	Embedded Systems	3-0-0	3	B
	Elective 4	3-0-0	3	C
	Elective 5 (Non Departmental)	3-0-0	3	D
CS492	Project		6	

Total Credits = 18

Hours: 30

Cumulative Credits= 180

### Elective 4:-

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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## BRANCH: *Electrical & Electronics Engineering*

### SEMESTER - 3

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA201	Linear Algebra & Complex Analysis	3-1-0	4	A
EE201	Circuits and, Networks	3-1-0	4	B
EE203	Analogue Electronic Circuits	3-1-0	4	C
EE205	DC Machines and Transformers	3-1-0	4	D
EE207	Computer Programming	2-1-0	3	E
HS200/ HS210	Business Economics/Life Skills	3-0-0/ 2-0-2	3	F
EE231	Electronic Circuits Lab	0-0-3	1	S
EE233	Programming Lab	0-0-3	1	T

**Total Credits = 24**

**Hours: 28/29**

**Cumulative Credits= 71**

### SEMESTER - 4

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA202	Probability Distributions, Transforms and Numerical Methods	3-1-0	4	A
EE202	Synchronous and Induction Machines	3-1-0	4	B
EE204	Digital Electronics and Logic Design	2-1-0	3	C
EE206	Material Science	3-0-0	3	D
EE208	Measurements and Instrumentation	3-1-0	4	E
HS210/ HS200	Life Skills/Business Economics	2-0-2/ 3-0-0	3	F
EE232	Electrical Machines Lab I	0-0-3	1	S
EE234	Circuits and Measurements Lab	0-0-3	1	T

**Total Credits = 23**

**Hours 28/27**

**Cumulative Credits= 94**

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## SEMESTER - 5

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

**Total Credits = 23**

**Hours: 28**

**Cumulative Credits= 117**

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

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## SEMESTER - 6

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

Total Credits = 23

Hours: 27

Cumulative Credits= 140

### Elective 2:-

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

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## SEMESTER - 7

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

Total Credits = 22

Hours: 27

Cumulative Credits= 162

### Elective 3:-

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

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## SEMESTER - 8

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

Total Credits = 18

Hours: 29

Cumulative Credits= 180

### Elective 4:-

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

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# Jyothi Engineering College

NAAC Accredited College with NBA Accredited Programmes\*

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A CENTRE OF EXCELLENCE IN SCIENCE & TECHNOLOGY BY THE CATHOLIC ARCHDIOCESE OF TRICHUR

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NBA accredited B.Tech Programmes in Computer Science & Engineering, Electronics & Communication Engineering, Electrical & Electronics Engineering and Mechanical Engineering valid for the academic years 2016-2022. NBA accredited B.Tech Programme in Civil Engineering valid for the academic years 2019-2022.

## BRANCH: Electronics & Communication Engineering

### SEMESTER - 3

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA201	Linear Algebra & Complex Analysis	3-1-0	4	A
EC201	Network Theory	3-1-0	4	B
EC203	Solid State Devices	3-1-0	4	C
EC205	Electronic Circuits	3-1-0	4	D
EC207	Logic Circuit Design	3-0-0	3	E
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	T

Total Credits = 24

Hours: 28/29

Cumulative Credits= 71

### SEMESTER - 4

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

Total Credits = 23 Hours 27/28

Cumulative Credits= 94

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## SEMESTER - 5

Course Code	Course Name	L-T-P	Credits	Exam Slot
EC301	Digital Signal Processing	3-1-0	4	A
EC303	Applied Electromagnetic Theory	3-0-0	3	B
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	E
	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	U

Total Credits = 23

Hours: 28

Cumulative Credits= 117

- Elective 1:-**
1. EC361 Digital System Design
  2. EC363 Optimization Techniques
  3. EC365 Biomedical Engineering
  4. EC360 Soft Computing

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## SEMESTER - 6

Course Code	Course Name	L-T-P	Credits	Exam Slot
EC302	Digital Communication	4-0-0	4	A
EC304	VLSI	3-0-0	3	B
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	E
	<b>Elective 2</b>	3-0-0	3	F
EC332	Communication Engg Lab (Analog & Digital)	0-0-3	1	S
EC334	Microcontroller Lab	0-0-3	1	T
EC352	Comprehensive Exam	0-1-1	2	U

**Total Credits = 23**

**Hours: 27**

**Cumulative Credits= 140**

### Elective 2:-

1. EC362 Modelling & Simulation of Communication Systems
2. EC364 Computer Vision
3. EC366 Real Time Operating Systems
4. EC368 Robotics
5. EC370 Digital Image Processing

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## SEMESTER - 7

Course Code	Course Name	L-T-P	Credits	Exam Slot
EC401	Information Theory & Coding	4-0-0	4	A
EC403	Microwave & Radar Engg	3-0-0	3	B
EC405	Optical Communication	3-0-0	3	C
EC407	Computer Communication	3-0-0	3	D
EC409	Control Systems	3-0-0	3	E
	<b>Elective 3</b>	3-0-0	3	F
EC451	Seminar & Project Preliminary	0-1-4	2	S
EC431	Communication Systems Lab (Optical & Microwave)	0-0-3	1	T

**Total Credits = 22**

**Hours: 27**

**Cumulative Credits= 162**

### Elective 3:-

1. EC461 Microwave Devices and Circuits
2. EC463 Speech and Audio Processing
3. EC465 MEMS
4. EC467 Pattern Recognition
5. EC469 Opto Electronic Devices

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## SEMESTER - 8

Course Code	Course Name	L-T-P	Credits	Exam Slot
EC402	Nano electronics	3-0-0	3	A
EC404	Advanced Communication Systems	3-0-0	3	B
	Elective 4	3-0-0	3	C
	Elective 5 (Non Departmental)	3-0-0	3	D
EC492	Project		6	All free hours

Total Credits = 18

Hours: 29

Cumulative Credits= 180

### Elective 4:-

1. EC462 Mixed Signal Circuit Design
2. EC464 Low Power VLSI Design
3. EC466 Cyber Security
4. EC468 Secure Communication
5. EC472 Integrated Optics & Photonic Systems

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## BRANCH: **Mechanical Engineering**

### SEMESTER - 3

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

**Total Credits = 24**

**Hours: 28/29**

**Cumulative Credits= 71**

### SEMESTER - 4

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA202	Probability Distributions, Transforms and Numerical Methods	3-1-0	4	A
ME202	Advanced Mechanics of Solids	3-1-0	4	B
ME204	Thermal Engineering	3-1-0	4	C
ME206	Fluid Machinery	2-1-0	3	D
ME220	Manufacturing Technology	3-0-0	3	E
HS210/ HS200	Life Skills/Business Economics	2-0-2/ 3-0-0	3	F
ME232	Thermal Engineering Lab	0-0-3	1	S
ME230	Fluid Mechanics & Machines Lab	0-0-3	1	T

**Total Credits = 23**

**Hours 28/27**

**Cumulative Credits= 94**

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## SEMESTER - 5

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

Total Credits = 23

Hours: 28

Cumulative Credits= 117

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

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## SEMESTER - 6

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

**Total Credits = 23**

**Hours: 27**

**Cumulative Credits= 140**

### Elective 2:-

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

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## SEMESTER - 7

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

Total Credits = 22

Hours: 27

Cumulative Credits= 162

### Elective 3:-

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

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## SEMESTER - 8

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

Total Credits = 18

Hours: 30

Cumulative Credits= 180

### Elective 4:-

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

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## BRANCH: *Mechatronics*

### SEMESTER - 3

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA201	Linear Algebra & Complex Analysis	3-1-0	4	A
MR201	C Programming	3-1-0	4	B
EE209	Electrical Technology	3-1-0	4	C
EC209	Analog Electronics	3-1-0	4	D
MR205	Science of Measurements	3-0-0	3	E
HS200/ HS210	Business Economics/Life Skills	3-0-0/ 2-0-2	3	F
EE235	Electrical Technology Lab	0-0-3	1	S
EC235	Analog Electronics Lab	0-0-3	1	T

Total Credits = 24

Hours: 28/29

Cumulative Credits= 71

### SEMESTER - 4

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA202	Probability Distributions, Transforms and Numerical Methods	3-1-0	4	A
EC212	Linear Integrated Circuits and Digital Electronics	4-0-0	4	B
ME200	Fluid Mechanics & Machinery	3-1-0	4	C
MR202	Sensors and Actuators	3-0-0	3	D
ME210	Metallurgy and Materials Engineering	3-0-0	3	E
HS210/ HS200	Life Skills/Business Economics	2-0-2/ 3-0-0	3	F
EC234	Linear Integrated Circuits and Digital Electronics Lab	0-0-3	1	S
ME230	Fluid Mechanics and Machinery Lab	0-0-3	1	T

Total Credits = 23

Hours 28/27

Cumulative Credits= 94

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## SEMESTER - 5

Course Code	Course Name	L-T-P	Credits	Exam Slot
MR301	Linear Control Systems	3-1-0	4	A
MR303	Microprocessors and Microcontrollers	3-0-0	3	B
MR305	PLC and Data Acquisition Systems	3-0-0	3	C
MR307	Thermodynamics	3-0-0	3	D
ME220	Manufacturing Technology	3-0-0	3	E
	<b>Elective 1</b>	3-0-0	3	F
MR341	Design Project	0-1-2	2	S
MR331	Microprocessors and Microcontrollers Lab	0-0-3	1	T
MR333	Measurements and PLC Lab	0-0-3	1	U

**Total Credits = 23**

**Hours: 28**

**Cumulative Credits= 117**

- Elective 1:-**
1. MR361 Reliability Engineering
  2. MR363 Object Oriented Programming
  3. MR365 Composite Materials
  4. ME369 Tribology

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## SEMESTER - 6

Course Code	Course Name	L-T-P	Credits	Exam Slot
MR302	Robotics Engineering	4-0-0	4	A
MR304	Digital Image Processing and Machine Vision	3-0-0	3	B
MR306	Mechanics of Solids	3-0-0	3	C
MR308	Digital Manufacturing	3-0-0	3	D
HS300	Principles of Management	3-0-0	3	E
	Elective 2	3-0-0	3	F
MR332	Manufacturing Engineering Lab	0-0-3	1	S
MR334	Advanced Instrumentation Lab	0-0-3	1	T
MR352	Comprehensive Exam	0-1-1	2	U

Total Credits = 23

Hours:27

Cumulative Credits= 140

### Elective 2:-

1. MR362 Digital Signal Processing
2. MR364 Energy Engineering Management
3. MR366 Biomaterials
3. AE403 Biomedical Instrumentation
4. ME368 Marketing Management

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## SEMESTER - 7

Course Code	Course Name	L-T-P	Credits	Exam Slot
MR401	Advanced Automation Systems	4-0-0	4	A
MR403	Nanotechnology	3-0-0	3	B
MR405	Embedded Systems	3-0-0	3	C
MR407	Autotronics	3-0-0	3	D
MR409	Micro Electro Mechanical Systems	3-0-0	3	E
	Elective 3	3-0-0	3	F
MR451	Seminar & Project Preliminary	0-1-4	2	S
MR431	Mechatronics Lab	0-0-3	1	T

Total Credits = 22 Hours: 27

Cumulative Credits= 162

### Elective 3:-

1. MR461 Fuzzy Logic Controllers
2. MR463 Bio Mechatronics
3. MR465 Entrepreneurship
4. ME469 Finite Element Analysis

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## SEMESTER - 8

Course Code	Course Name	L-T-P	Credits	Exam Slot
MR402	Soft Computing Techniques	3-0-0	3	A
MR404	Power Electronics and Drives	3-0-0	3	B
	Elective 4	3-0-0	3	C
	Elective 5 (Non Departmental)	3-0-0	3	D
MR492	Project		6	

Total Credits = 18

Hours: 29

Cumulative Credits= 180

### Elective 4:-

1. MR462 Industrial Electronics and Applications
2. MR464 Agile Manufacturing Systems
3. MR466 Special Electrical Machines and Applications
4. MR468 Research Methodology

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## ELECTIVE 5 (NON DEPARTMENTAL ELECTIVE COURSES)

1. AO482 FLIGHT AGAINST GRAVITY
2. AE482 INDUSTRIAL INSTRUMENTATION
3. AE484 INSTRUMENTATION SYSTEM DESIGN
4. AU484 MICROPROCESSOR AND EMBEDDED SYSTEMS
5. AU486 NOISE, VIBRATION AND HARSHNESS
6. BM482 BIOMEDICAL INSTRUMENTATION
7. BM484 MEDICAL IMAGING & IMAGE PROCESSING TECHNIQUES
8. BT461 DESIGN OF BIOLOGICAL WASTE WATER SYSTEMS
9. BT362 SUSTAINABLE ENERGY PROCESSES
10. CH482 PROCESS UTILITIES AND PIPE LINE DESIGN
11. CH484 FUEL CELL TECHNOLOGY
12. CE482 ENVIRONMENTAL IMPACT ASSESSMENT
13. CE484 APPLIED EARTH SYSTEMS
14. CE486 GEO INFORMATICS FOR INFRASTRUCTURE MANAGEMENT
15. CE488 DISASTER MANAGEMENT
16. CE492 ENVIRONMENT HEALTH AND SAFETY
17. CS482 DATA STRUCTURES
18. CS484 COMPUTER GRAPHICS
19. CS486 OBJECT ORIENTED PROGRAMMING
20. CS488 C # AND .NET PROGRAMMING
21. EE482 ENERGY MANAGEMENT AND AUDITING
22. EE484 CONTROL SYSTEMS
23. EE486 SOFT COMPUTING
24. EE488 INDUSTRIAL AUTOMATION

*annas*  
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25. EE492 INSTRUMENTATION SYSTEMS
26. EC482 BIOMEDICAL ENGINEERING
27. FT482 FOOD PROCESS ENGINEERING
28. FT484 FOOD STORAGE ENGINEERING
29. FT486 FOOD ADDITIVES AND FLAVOURING
30. IE482 FINANCIAL MANAGEMENT
31. IE484 INTRODUCTION TO BUSINESS ANALYTICS
32. IE486 DESIGN AND ANALYSIS OF EXPERIMENTS
33. IE488 TOTAL QUALITY MANAGEMENT
34. IC482 BIOMEDICAL SIGNAL PROCESSING
35. IT482 INFORMATION SYSTEM MANAGEMENT
36. MA482 APPLIED LINEAR ALGEBRA
37. MA484 OPERATIONS RESEARCH
38. MA486 ADVANCED NUMERICAL COMPUTATIONS
39. MA488 CRYPTOGRAPHY (Not for IT branch)
40. ME469 FINITE ELEMENT ANALYSIS
41. ME482 ENERGY CONSERVATION AND MANAGEMENT
42. ME471 OPTIMIZATION TECHNIQUES
43. MP482 PRODUCT DEVELOPMENT AND DESIGN
44. MP469 INDUSTRIAL PSYCHOLOGY & ORGANIZATIONAL BEHAVIOUR
45. MP484 PROJECT MANAGEMENT
46. MT482 INDUSTRIAL SAFETY
47. MR482 MECHATRONICS
48. FS482 RESPONSIBLE ENGINEERING
49. SB482 DREDGERS AND HARBOUR CRAFTS
50. HS482 PROFESSIONAL ETHICS

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## CURRICULUM

## B.TECH (2019 SCHEME)

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APJ ABDUL KALAM  
TECHNOLOGICAL  
UNIVERSITY

## CIVIL ENGINEERING



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## SEMESTER I

SLO T	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	MAT 101	LINEAR ALGEBRA AND CALCULUS	3-1-0	4	4
B 1/2	PHT 110	ENGINEERING PHYSICS B	3-1-0	4	4
	CYT 100	ENGINEERING CHEMISTRY	3-1-0	4	4
C 1/2	EST 100	ENGINEERING MECHANICS	2-1-0	3	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
<b>TOTAL</b>				<b>23/24 *</b>	<b>17</b>

\*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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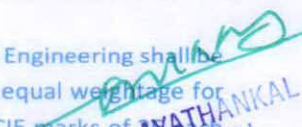
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## SEMESTER II

SLO T	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	MAT 102	VECTOR CALCULUS, DIFFERENTIAL EQUATIONS AND TRANSFORMS	3-1-0	4	4
B 1/2	PHT 110	ENGINEERING PHYSICS B	3-1-0	4	4
	CYT 100	ENGINEERING CHEMISTRY	3-1-0	4	4
C 1/2	EST 100	ENGINEERING MECHANICS	2-1-0	3	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 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
	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
<b>TOTAL</b>				<b>28/29</b>	<b>21</b>

### NOTE:

1. 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 S1 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.
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 50 each and ESE marks of 50 each. Students belonging to branches of AEI, Ei, BME, ECE, EEE, ICE, MCE, ME, RA can choose this course in S1.

  
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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.

#### 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 ANALYSIS	3-1-0	4	4
B	CET201	MECHANICS OF SOLIDS	3-1-0	4	4
C	CET203	FLUID MECHANICS & HYDRAULICS	3-1-0	4	4
D	CET205	SURVEYING & GEOMATICS	4-0-0	4	4
E 1/2	EST200	DESIGN & ENGINEERING	2-0-0	2	2
	HUT200	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
T	CEL203	SURVEY LAB	0-0-3	3	2
R/M	VAC	Remedial/Minor course	3-1-0	4 *	4
<b>TOTAL</b>				<b>26/30</b>	<b>22/26</b>

### 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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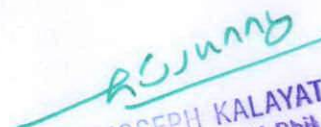


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SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	MAT202	PROBABILITY, STATISTICS AND NUMERICAL METHODS	3-1-0	4	4
B	CET202	ENGINEERING GEOLOGY	3-0-1	4	4
C	CET204	GEOTECHNICAL ENGINEERING – I	4-0-0	4	4
D	CET206	TRANSPORTATION ENGINEERING	4-0-0	4	4
E 1/2	EST200	DESIGN & ENGINEERING	2-0-0	2	2
	HUT200	PROFESSIONAL ETHICS	2-0-0	2	2
F	MCN202	CONSTITUTION OF INDIA	2-0-0	2	--
S	CEL202	MATERIAL TESTING LAB– I	0-0-3	3	2
T	CEL204	FLUID MECHANICS LAB	0-0-3	3	2
R/M/H	VAC	Remedial/Minor/Honours course	3-1-0	4*	4
<b>TOTAL</b>				<b>26/30</b>	<b>22/26</b>

**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.
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SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	CET301	STRUCTURAL ANALYSIS – I	3-1-0	4	4
B	CET303	DESIGN OF CONCRETE STRUCTURES	3-1-0	4	4
C	CET305	GEOTECHNICAL ENGINEERING – II	4-0-0	4	4
D	CET307	HYDROLOGY & WATER RESOURCES ENGINEERING	4-0-0	4	4
E	CET309	CONSTRUCTION TECHNOLOGY & MANAGEMENT	3-0-0	3	3
F	MCN301	DISASTER MANAGEMENT	2-0-0	2	--
S	CEL331	MATERIAL TESTING LAB – II	0-0-3	3	2
T	CEL333	GEOTECHNICAL ENGINEERING LAB	0-0-3	3	2
R/M/H	VAC	Remedial/Minor/Honours course	3-1-0	4*	4
<b>TOTAL</b>				<b>27/31</b>	<b>23/27</b>

**NOTE:**

- \*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
A	CET302	STRUCTURAL ANALYSIS – II	3-1-0	4	4
B	CET304	ENVIRONMENTAL ENGINEERING	4-0-0	4	4
C	CET306	DESIGN OF HYDRAULIC STRUCTURES	4-0-0	4	4
D	CETXXX	PROGRAM ELECTIVE I	3-0-0	3	3
E	HUT300	INDUSTRIAL ECONOMICS & FOREIGN TRADE	3-0-0	3	3
F	CET308	COMPREHENSIVE COURSE WORK	1-0-0	1	1
S	CEL332	TRANSPORTATION ENGINEERING LAB	0-0-3	3	2
T	CEL334	CIVIL ENGINEERING SOFTWARE LAB	0-0-3	3	2
R/M/H	VAC	Remedial/Minor/Honours course	3-1-0	4*	4
<b>TOTAL</b>				<b>25/29</b>	<b>23/27</b>

## PROGRAM ELECTIVE I

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
D	CET312	ADVANCED COMPUTATIONAL METHODS	3-0-0	3	3
	CET322	GEOTECHNICAL INVESTIGATION	3-0-0		
	CET332	TRAFFIC ENGINEERING & MANAGEMENT	3-0-0		
	CET342	MECHANICS OF FLUID FLOW	3-0-0		
	CET352	ADVANCED CONCRETE TECHNOLOGY	3-0-0		
	CET362	ENVIRONMENTAL IMPACT ASSESSMENT	3-0-0		
	CET372	FUNCTIONAL DESIGN OF BUILDINGS	3-0-0		

  
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## NOTE:

1. **\*\*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 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
A	CET401	DESIGN OF STEEL STRUCTURES	3-0-0	3	3
B	CETXXX	PROGRAM ELECTIVE II	3-0-0	3	3
C	CETXXX	OPEN ELECTIVE	3-0-0	3	3
D	MCN401	INDUSTRIAL SAFETY ENGINEERING	2-1-0	3	---
S	CEL411	ENVIRONMENTAL ENGG LAB	0-0-3	3	2
T	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
<b>TOTAL</b>				<b>24/28</b>	<b>15/19</b>

## PROGRAM ELECTIVE II

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
B	CET413	PRESTRESSED CONCRETE	3-0-0	3	3
	CET423	GROUND IMPROVEMENT TECHNIQUES	3-0-0		
	CET433	HIGHWAY MATERIALS AND DESIGN	3-0-0		
	CET443	APPLIED HYDROLOGY	3-0-0		
	CET453	CONSTRUCTION PLANNING & MANAGEMENT	3-0-0		
	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.

Dr. J. JOSEPH, M.Sc., M.Phil., B.Ed  
 M.Tech., M.A., M.Sc., M.Phil., Ph.D (Maths)  
 Ph.D (Computer Science)  
 PRINCIPAL  
 Jyothi Engineering College  
 P.O. - 679 531





# Jyothi Engineering College

NAAC Accredited College with NBA Accredited Programmes\*

Approved by AICTE & affiliated to APJ Abdul Kalam Technological University

A CENTRE OF EXCELLENCE IN SCIENCE & TECHNOLOGY BY THE CATHOLIC ARCHDIOCESE OF TRICHUR

JYOTHI HILLS, VETTIKATTIRI P.O., CHERUTHURUTHY, THRISSUR. PIN-679531 PH : +91- 4884-259000, 274423 FAX : 04884-274777



NBA accredited B.Tech Programmes in Computer Science & Engineering, Electronics & Communication Engineering, Electrical & Electronics Engineering and Mechanical Engineering valid for the academic years 2016-2022. NBA accredited B.Tech Programme in Civil Engineering valid for the academic years 2019-2022.

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
C	CET415	ENVIRONMENTAL IMPACT ASSESSMENT	2-1-0	3	3
	CET425	APPLIED EARTH SYSTEMS	2-1-0		
	CET435	INFORMATICS FOR INFRASTRUCTURE MANAGEMENT	2-1-0		
	CET445	NATURAL DISASTERS AND MITIGATION	2-1-0		
	CET455	ENVIRONMENTAL HEALTH AND SAFETY	2-1-0		
	CET465	GEOINFORMATICS	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 Noon). If a student does not opt for minor/honours programme, he/she can be given remedial class.
- 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	10
Guide	20
Technical Content of the Report	30
Presentation	40

- 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.

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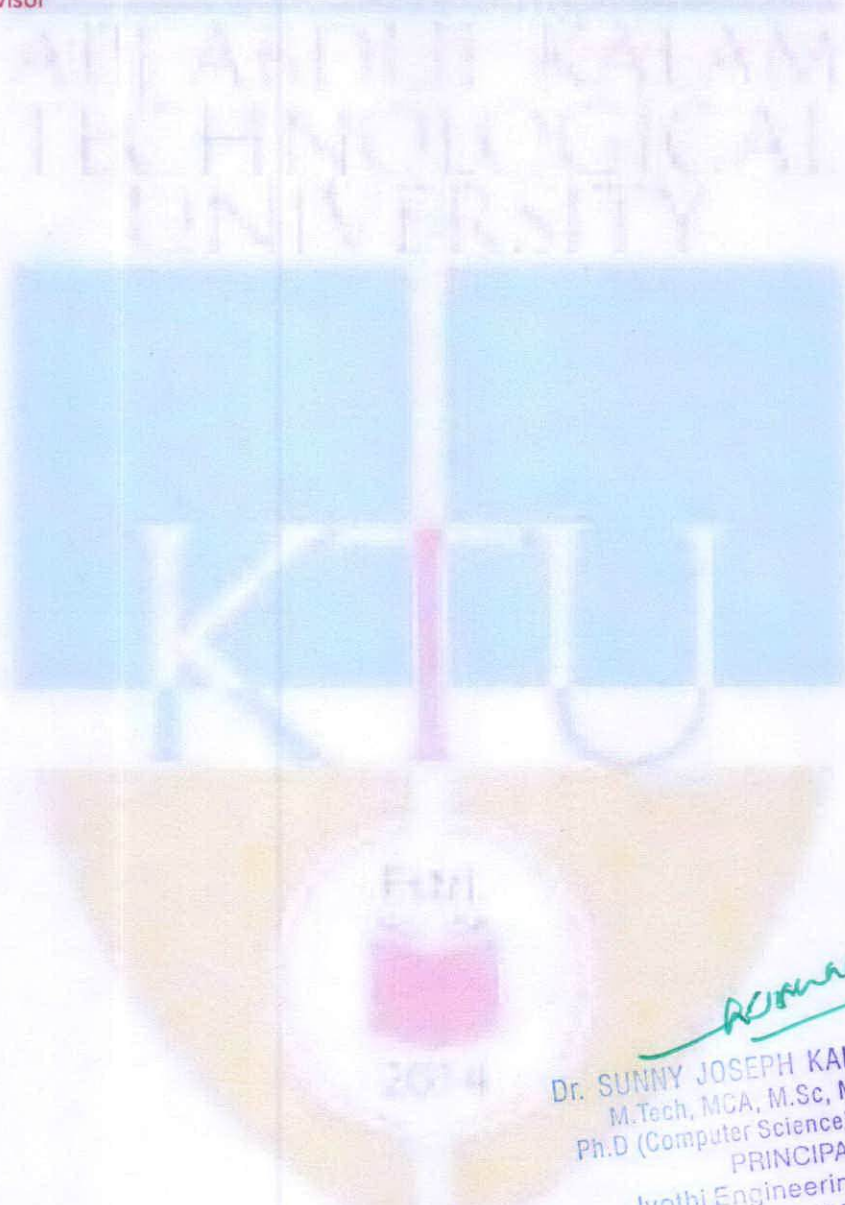
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- Preparing a Written Report on the Study conducted for presentation to the Department;
- Final Seminar, as oral Presentation before the evaluation committee.

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 HoD or a senior faculty member, Project coordinator and project supervisor



*Acknowledged*  
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## SEMESTER VIII

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	CET402	QUANTITY SURVEYING & VALUATION	3-0-0	3	3
B	CETXXX	PROGRAM ELECTIVE III	3-0-0	3	3
C	CETXXX	PROGRAM ELECTIVE IV	3-0-0	3	3
D	CETXXX	PROGRAM ELECTIVE V	3-0-0	3	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
<b>TOTAL</b>				<b>25/29</b>	<b>17/21</b>

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## PROGRAM ELECTIVE III

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
B	CET414	ADVANCED STRUCTURAL DESIGN	3-0-0	3	3
	CET424	GEOENVIRONMENTAL ENGINEERING	3-0-0		
	CET434	RAILWAY AND TUNNEL ENGINEERING	3-0-0		
	CET444	IRRIGATION & DRAINAGE ENGINEERING	3-0-0		
	CET454	CONSTRUCTION METHODS & EQUIPMENT	3-0-0		
	CET464	AIRQUALITY MANAGEMENT	3-0-0		
	CET474	URBAN PLANNING & ARCHITECTURE	3-0-0		

## PROGRAM ELECTIVE IV

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

  
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## PROGRAM ELECTIVE V

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
D	CET418	EARTHQUAKERESISTANT DESIGN	3-0-0	3	3
	CET428	SOIL STRUCTURE INTERACTION	3-0-0		
	CET438	AIRPORT, SEAPORT AND HARBOUR ENGINEERING	3-0-0		
	CET448	HYDROCLIMATOLOGY	3-0-0		
	CET458	SUSTAINABLE CONSTRUCTION	3-0-0		
	CET468	CLIMATE CHANGE & SUSTAINABILITY	3-0-0		
	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.
- 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.
- 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

(The final evaluation committee comprises Project coordinator, expert from Industry/Research Institute)

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MCA, M.Sc., M.Phil., B.Ed  
Ph.D (Maths)





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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 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 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:

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Semester	BASKET I				BASKET II				BASKET III			
	Course No.	Course Name	HOURS	CREDITS	Course No.	Course Name	HOURS	CREDITS	Course No.	Course Name	HOURS	CREDITS
S3	CET281	Building construction & structural systems	4	4	CET283	Introduction to Geotechnical Engineering	4	4	CET285	Informatics for Infrastructure Management	4	4
S4	CET282	Building drawing	4	4	CET284	Introduction to Transportation Engineering	4	4	CET286	Climate change & hazard mitigation	4	4
S5	CET381	Structural mechanics	4	4	CET383	Eco-friendly transportation systems	4	4	CET385	Sustainability analysis & design	4	4
S6	CET382	Estimation & costing	4	4	CET384	Geotechnical investigation & ground improvement techniques	4	4	CET386	Environmental health & safety	4	4
S7	CED481	MINI PROJECT	4	4	CED481	MINI PROJECT	4	4	CED481	MINI PROJECT	4	4
S8	CED482	MINI PROJECT	4	4	CED482	MINI PROJECT	4	4	CED482	MINI PROJECT	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.

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M.Tech, MCA, M.Sc, M.Phil, B.Ed  
Assistant Professor (Computer Science), Ph.D (Maths)





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- (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 CIVIL ENGINEERING** can opt to study the courses listed below:

  
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Semester	GROUP I				GROUP II				GROUP III			
	Course No.	Course Name	H	C	Course No.	Course Name	H	C	Course No.	Course Name	H	C
			OURS	CREDITS			OURS	CREDITS			OURS	CREDITS
S4	CET292	ADVANCED MECHANICS OF SOLIDS	4	4	CET294	PAVEMENT CONSTRUCTION AND MANAGEMENT	4	4	CET296	GEOGRAPHICAL INFORMATION SYSTEMS	4	4
S5	CET393	STRUCTURAL DYNAMICS	4	4	CET395	TRANSPORTATION SYSTEMS MANAGEMENT	4	4	CET397	GROUND WATER HYDROLOGY	4	4
S6	CET394	FINITE ELEMENT METHODS	4	4	CET396	EARTH DAMS AND EARTH RETAINING STRUCTURES	4	4	CET398	ENVIRONMENTAL POLLUTION MODELLING	4	4
S7	CET495	MODERN CONSTRUCTION MATERIALS	4	4	CET497	SOIL DYNAMICS AND MACHINE FOUNDATIONS	4	4	CET499	ENVIRONMENTAL POLLUTION CONTROL TECHNIQUES	4	4
S8	CED496	MINI PROJECT	4	4	CED496	MINI PROJECT	4	4	CED496	MINI PROJECT	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 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 it as concerned citizens of the world.
- **Physical Activities & Sports:** Engage students in sports and physical activity to ensure healthy physical and mental growth.

*Ammay*  
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## COMPUTER SCIENCE AND ENGINEERING

### 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.

Sl. No	Category	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
<b>Total Mandatory Credits</b>			<b>162</b>
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:

Sem	1	2	3	4	5	6	7	8	Total
Credits	17	21	22	22	23	23	15	17	160
Activity Points	50				50				---
Credits for Activity	2								2
G.Total									162

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 Jyothi Engineering College  
 Thrissur - 679 531





# Jyothi Engineering College

NAAC Accredited College with NER Accredited Programmes\*

Approved by AICTE & affiliated to APJ Abdul Kalam Technological University

A CENTRE OF EXCELLENCE IN SCIENCE & TECHNOLOGY BY THE CATHOLIC ARCHDIOCESE OF TRICHUR

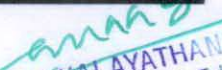
JYOTHI HILLS, VETIKATTIRI P.O., CHERUTHURUTHY, THRISSUR, PIN-679531 PH : +91- 4884-259000, 274423 FAX : 04884-274777



NBA accredited B.Tech Programmes in Computer Science & Engineering, Electronics & Communication Engineering, Electrical & Electronics Engineering and Mechanical Engineering valid for the academic years 2016-2022. NBA accredited B.Tech Programme in Civil Engineering valid for the academic years 2019-2022.

## SEMESTER I

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	MAT 101	LINEAR ALGEBRA AND CALCULUS	3-1-0	4	4
B 1/2	PHT 100	ENGINEERING PHYSICS A	3-1-0	4	4
	CYT 100	ENGINEERING CHEMISTRY	3-1-0	4	4
C 1/2	EST 100	ENGINEERING MECHANICS	2-1-0	3	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
<b>TOTAL</b>				<b>23/24</b>	<b>17</b>

  
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## SEMESTER II

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	MAT 102	VECTOR CALCULUS, DIFFERENTIAL EQUATIONS AND TRANSFORMS	3-1-0	4	4
B 1/2	PHT 100	ENGINEERING PHYSICS A	3-1-0	4	4
	CYT 100	ENGINEERING CHEMISTRY	3-1-0	4	4
C 1/2	EST 100	ENGINEERING MECHANICS	2-1-0	3	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 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
	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
<b>TOTAL</b>				<b>28/29</b>	<b>24</b>

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## 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 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 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 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.
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, Purposeful 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.

## SEMESTER III

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	MAT 203	DISCRETE MATHEMATICAL STRUCTURES	3-1-0	4	4
B	CST 201	DATA STRUCTURES	3-1-0	4	4
C	CST 203	LOGIC SYSTEM DESIGN	3-1-0	4	4
D	CST 205	OBJECT ORIENTED PROGRAMMING USING JAVA	3-1-0	4	4
E (1/2)	EST 200	DESIGN & ENGINEERING	2-0-0	2	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
T	CSL 203	OBJECT ORIENTED PROGRAMMING LAB (IN JAVA)	0-0-3	3	2
R/M	VAC	Remedial/Minor course	3-1-0	4	4
<b>TOTAL</b>				<b>26*</b>	<b>22/26</b>
* Excluding Hours to be engaged for Remedial/Minor course.					

*amino*  
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## SEMESTER IV

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	MAT 206	GRAPH THEORY	3-1-0	4	4
B	CST 202	C O M P U T E R O R G A N I S A T I O N A N D A R C H I T E C T U R E	3-1-0	4	4
C	CST 204	DATABASE MANAGEMENT SYSTEMS	3-1-0	4	4
D	CST 206	OPERATING SYSTEMS	3-1-0	4	4
E (1/2 )	EST 200	DESIGN & ENGINEERING	2-0-0	2	2
	HUT 200	PROFESSIONAL ETHICS	2-0-0	2	2
F	MCN 202	CONSTITUTION OF INDIA	2-0-0	2	--
S	CSL 202	DIGITAL LAB	0-0-3	3	2
T	CSL204	OPERATING SYSTEMS LAB	0-0-3	3	2
R/M/ H	VAC	Remedial/Minor/Honors course	3-1-0	4	4
<b>TOTAL</b>				<b>26*</b>	<b>22/26</b>
* Excluding Hours to be engaged for Remedial/Minor/Honors course.					

### 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
A	CST 301	FORMAL LANGUAGES AND AUTOMATA THEORY	3-1-0	4	4
B	CST 303	COMPUTER NETWORKS	3-1-0	4	4
C	CST 305	SYSTEM SOFTWARE	3-1-0	4	4
D	CST 307	MICROPROCESSORS AND MICROCONTROLLERS	3-1-0	4	4
E	CST 309	MANAGEMENT OF SOFTWARE SYSTEMS	3-0-0	3	3
F	MCN 301	DISASTER MANAGEMENT	2-0-0	2	--
S	CSL 331	SYSTEM SOFTWARE AND MICROPROCESSORS LAB	0-0-4	4	2
T	CSL 333	DATABASE MANAGEMENT SYSTEMS LAB	0-0-4	4	2
R/M/H	VAC	Remedial/Minor/Honors course*	2-0-0	4	4
<b>TOTAL</b>				<b>29*</b>	<b>23/27</b>

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

### NOTE:

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.

*Sunny*

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## SEMESTER VI

SLOT	COURS E NO.	COURSES	L-T-P	HOURS	CREDIT
A	CST 302	COMPILER DESIGN	3-1-0	4	4
B	CST 304	COMPUTER GRAPHICS AND IMAGE PROCESSING	3-1-0	4	4
C	CST 306	ALGORITHM ANALYSIS AND DESIGN	3-1-0	4	4
D	CST ---	PROGRAM ELECTIVE I	2-1-0	3	3
E	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	2
T	CSD 334	MINIPROJECT	0-0-3	3	2
R/M/H	VAC	Remedial/Minor/Honors course*	3-1-0	4	4
<b>TOTAL</b>				25*	23/27
* Excluding Hours to be engaged for Remedial/Minor/Honors course.					

### Note:

**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 included from these areas under various Elective Buckets are shown in the table below.

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Different Specializations introduced through various Elective Buckets				
Bucket	Specialisation	Semester		
		S6	S7	S8
1	Machine Learning	FOUNDATIONS OF MACHINE LEARNING (E-I)	MACHINE LEARNING (E-II)	DEEP LEARNING (E-III)
2	Data Science	DATA ANALYTICS (E-I)	CLOUD COMPUTING (E-II)	BLOCK CHAIN TECHNOLOGIES (E-V)
3	Security in Computing	FOUNDATIONS OF SECURITY IN COMPUTING (E-I)	SECURITY IN COMPUTING (E-II)	CRYPTOGRAPHY (E-III)
4	Formal Methods in Software Engineering	AUTOMATED VERIFICATION (E-I)	MODEL BASED SOFTWARE DEVELOPMENT (E-II)	SOFTWARE TESTING (E-V)
5	Hardware Technologies	INTRODUCTION TO IA32 ARCHITECTURE (E-I)	ADVANCED TOPICS IN IA32 ARCHITECTURE (E-II)	UNIFIED EXTENDED FIRMWARE INTERFACE (E-IV)

## PROGRAM ELECTIVE I

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
D	CST 312	i FOUNDATIONS OF MACHINE LEARNING	2-1-0	3	3
	CST 322	ii DATA ANALYTICS	2-1-0		
	CST 332	iii FOUNDATIONS OF SECURITY IN COMPUTING	2-1-0		
	CST 342	iv AUTOMATED VERIFICATION	2-1-0		
	CST 352	v INTRODUCTION TO IA32 ARCHITECTURE	2-1-0		
	CST 362	vi PROGRAMMING IN PYTHON	2-1-0		
	CST 372	vii DATA AND COMPUTER COMMUNICATION	2-1-0		

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## COURSES TO BE CONSIDERED FOR COMPREHENSIVE COURSE WORK

I DISCRETE MATHEMATICAL STRUCTURES
ii DATA STRUCTURES
iii OPERATING SYSTEMS
iv COMPUTER ORGANIZATION AND ARCHITECTURE
v DATABASE MANAGEMENT SYSTEMS
vi FORMAL LANGUAGES AND AUTOMATA THEORY

### 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

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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 CIE

Attendance	10
Project Guide	15
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

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	CST 401	ARTIFICIAL INTELLIGENCE	2-1-0	3	3
B	CST ---	PROGRAM ELECTIVE II	2-1-0	3	3
C	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
T	CSQ 413	SEMINAR	0-0-3	3	2
U	CSD 415	PROJECT PHASE I	0-0-6	6	2
R/M/ H	VAC	Remedial/Minor/Honors course*	3-1-0	4	4
<b>TOTAL</b>				<b>24*</b>	<b>15/19</b>

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

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## PROGRAM ELECTIVE II

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
B	CST 413	i MACHINE LEARNING	2-1-0	3	3
	CST 423	ii CLOUD COMPUTING	2-1-0		
	CST 433	iii SECURITY IN COMPUTING	2-1-0		
	CST 443	iv MODEL BASED SOFTWARE DEVELOPMENT	2-1-0		
	CST 453	v ADVANCED TOPICS IN IA32 ARCHITECTURE	2-1-0		
	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
B	CST 415	i INTRODUCTION TO MOBILE COMPUTING	2-1-0	3	3
	CST 425	ii INTRODUCTION TO DEEP LEARNING	2-1-0		
	CST 435	iii COMPUTER GRAPHICS	2-1-0		
	CST 445	iv PYTHON FOR ENGINEERS	2-1-0		
	CST 455	v OBJECT ORIENTED CONCEPTS	2-1-0		

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JYOTHI HILLS, VETTIKATTIRI P.O., CHERUTHURUTHY, THRISSUR. PIN-679531 PH : +91- 4884-259000, 274423 FAX : 04884-274777



NBA accredited B.Tech Programmes in Computer Science & Engineering, Electronics & Communication Engineering, Electrical & Electronics Engineering and Mechanical Engineering valid for the academic years 2016-2022. NBA accredited B.Tech Programme in Civil Engineering valid for the academic years 2019-2022.

## 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.
2. Seminar: To encourage and motivate the students to read and collect recent and reliable information about their area of interest confined to the relevant 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	10
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-I 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 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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# Jyothi Engineering College

NAAC Accredited College with NBA Accredited Programmes\*

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A CENTRE OF EXCELLENCE IN SCIENCE & TECHNOLOGY BY THE CATHOLIC ARCHDIOCESE OF TRICHUR

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- > 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

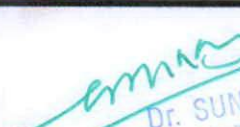
Project Guide(s)	30
Interim evaluation by the evaluation committee	20
Final project presentation	30
Final evaluation by the evaluation committee	20

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	3
B	CST ---	PROGRAM ELECTIVE III	2-1-0	3	3
C	CST ---	PROGRAM ELECTIVE IV	2-1-0	3	3
D	CST ---	PROGRAM ELECTIVE V	2-1-0	3	3
T	CST 404	COMPREHENSIVE COURSE VIVA	1-0-0	1	1
U	CSD 416	PROJECT PHASE II	0-0-12	12	4
R/M/H	VAC	Remedial/Minor/Honors course	3-1-0	4	4
<b>TOTAL</b>				<b>25*</b>	<b>17/21</b>

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

  
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**PROGRAM ELECTIVE III**

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
B	CST 414	i DEEP LEARNING	2-1-0	3	3
	CST 424	ii PROGRAMMING PARADIGMS	2-1-0		
	CST 434	iii CRYPTOGRAPHY	2-1-0		
	CST 444	iv SOFT COMPUTING	2-1-0		
	CST 454	v FUZZY SET THEORY AND APPLICATIONS	2-1-0		
	CST 464	vi EMBEDDED SYSTEMS	2-1-0		
	CST 474	vii COMPUTER VISION	2-1-0		

**PROGRAM ELECTIVE IV**

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
C	CST 416	i FORMAL METHODS AND TOOLS IN SOFTWARE ENGINEERING	2-1-0	3	3
	CST 426	ii CLIENT SERVER ARCHITECTURE	2-1-0		
	CST 436	iii PARALLEL COMPUTING	2-1-0		
	CST 446	iv DATA COMPRESSION TECHNIQUES	2-1-0		
	CST 456	v UNIFIED EXTENDED FIRMWARE INTERFACE	2-1-0		
	CST 466	vi DATA MINING	2-1-0		
	CST 476	vii MOBILE COMPUTING	2-1-0		

  
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## PROGRAM ELECTIVE V

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
D	CST 418	i HIGH PERFORMANCE COMPUTING	2-1-0	3	3
	CST 428	ii BLOCK CHAIN TECHNOLOGIES	2-1-0		
	CST 438	iii IMAGE PROCESSING TECHNIQUE	2-1-0		
	CST 448	iv INTERNET OF THINGS	2-1-0		
	CST 458	v SOFTWARE TESTING	2-1-0		
	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.
- 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.
- 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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- In depth study of the topic assigned in the light of the Report prepared in Phase I;
- 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 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 the concerned evaluation committee

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

Project Guide 30

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

Quality of the report evaluated by the above committee 10

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

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 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 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. 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 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:

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MINOR BUCKETS										
S E M E S T E R	BUCKET-1			BUCKET-2			BUCKET-3			
	Specialization - Software Engineering			Specialization - Machine Learning			Specialization - Networking			
	CO UR SE NO	COURSE NAME	C R E D I T	CO UR SE NO	COURSE NAME	C R E D I T	CO UR SE NO	COURSE NAME	C R E D I T	
S3	CST 281	OBJECT ORIENTED PROGRAMMING	4 4	CST 283	PYTHON FOR MACHINE LEARNING	4 4	CST 285	DATA COMMUNICAT ION	4 4	
S4	CST 282	PROGRAMMING METHODOLOGIE S	4 4	CST 284	MATHEMATIC S FOR MACHINE LEARNING	4 4	CST 286	INTRODUCTIO N TO COMPUTER NETWORKS	4 4	
S5	CST 381	CONCEPTS IN SOFTWARE ENGINEERING	4 4	CST 383	CONCEPTS IN MACHINE LEARNING	4 4	CST 385	CLIENT SERVER SYSTEMS	4 4	
S6	CST 382	INTRODUCTION TO SOFTWARE TESTING	4 4	CST 384	CONCEPTS IN DEEP LEARNING	4 4	CST 386	WIRELESS NETWORKS AND IOT APPLICATION S	4 4	
S7	CSD 481	Miniproject	4 4	CSD 481	Miniproject	4 4	CSD 481	Miniproject	4 4	
S8	CSD 482	Miniproject	4 4	CSD 482	Miniproject	4 4	CSD 482	Miniproject	4 4	

Note-1: Name of the specialization shall be mentioned in the Minor Degree to be awarded

Note-2: Any B.Tech students from non-Computer Science/non-IT streams can register for the courses in the minor buckets.

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## 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.

- (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 Honors courses shall be identified by H slot courses.
- (ii) Registration is permitted for Honors at the beginning of fourth semester. Total credits required 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. 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.
- (iv) There won't be any supplementary examination for the courses chosen for Honors.
- (v) On successful accumulation of credits at the end of the programme, "Bachelor of Technology in xxx, with Honors" will be awarded if overall CGPA is greater than

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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 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. 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:

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HONORS BUCKETS												
S E M E S T E R	BUCKET-1				BUCKET-2				BUCKET-3			
	Specialization - Security in Computing				Specialization - Machine Learning				Specialization - Formal Methods			
	COURSE NO	COURSE NAME	CREDITS	CREDITS	COURSE NO	COURSE NAME	CREDITS	CREDITS	COURSE NO	COURSE NAME	CREDITS	CREDITS
S4	CST 292	NUMBER THEORY	4	4	CST 294	COMPUTATIONAL FUNDAMENTALS FOR MACHINE LEARNING	4	4	CST 296	PRINCIPLES OF PROGRAM ANALYSIS AND VERIFICATION	4	4
S5	CST 393	CRYPTOGRAPHIC 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 COMPUTABILITY AND COMPLEXITY	4	4
S7	CST 495	CYBER FORENSICS	4	4	CST 497	ADVANCED TOPICS IN ARTIFICIAL INTELLIGENCE	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

Note: Name of the specialization shall be mentioned in the Honors Degree to be awarded

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## ELECTRONICS & COMMUNICATION ENGINEERING

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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
B 1/2	PHT 100	ENGINEERING PHYSICS A	3-1-0	4	4
	CYT 100	ENGINEERING CHEMISTRY	3-1-0	4	4
C 1/2	EST 100	ENGINEERING MECHANICS	2-1-0	3	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
<b>TOTAL</b>				<b>23/24 *</b>	<b>17</b>

\*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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JYOTHI HILLS, VETTIKATTIRI P.O., CHERUTHURUTHY, THRISSUR, PIN-679531 PH : +91- 4884-259000, 274423 FAX : 04884-274777



NBA accredited B.Tech Programmes in Computer Science & Engineering, Electronics & Communication Engineering, Electrical & Electronics Engineering and Mechanical Engineering valid for the academic years 2016-2022. NBA accredited B.Tech Programme in Civil Engineering valid for the academic years 2019-2022.

## SEMESTER II

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	MAT 102	VECTOR CALCULUS, DIFFERENTIAL EQUATIONS AND TRANSFORMS	3-1-0	4	4
B 1/2	PHT 100	ENGINEERING PHYSICS A	3-1-0	4	4
	CYT 100	ENGINEERING CHEMISTRY	3-1-0	4	4
C 1/2	EST 100	ENGINEERING MECHANICS	2-1-0	3	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 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
	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
<b>TOTAL</b>				<b>28/29</b>	<b>21</b>

### 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 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 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 S1 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 contains equal weightage for

  
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# Jyothi Engineering College

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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, 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, 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.

#### 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 ANALYSIS	3-1-0	4	4
B	ECT 201	SOLID STATE DEVICES	3-1-0	4	4
C	ECT 203	LOGIC CIRCUIT DESIGN	3-1-0	4	4
D	ECT 205	NETWORK THEORY	3-1-0	4	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
T	ECL 203	LOGIC DESIGN LAB	0-0-3	3	2
R/M	VAC	Remedial/Minor course	3-1-0	4**	4
<b>TOTAL</b>				<b>26/30</b>	<b>22/26</b>

### 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	CREDIT
A	MAT 204	PROBABILITY, RANDOM PROCESS AND NUMERICAL METHODS	3-1-0	4	4
B	ECT 202	ANALOG CIRCUITS	3-1-0	4	4
C	ECT 204	SIGNALS AND SYSTEMS	3-1-0	4	4
D	ECT 206	COMPUTER ARCHITECTURE AND MICROCONTROLLERS	3-1-0	4	4
E 1/2	EST200	DESIGN AND ENGINEERING	2-0-0	2	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	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.
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SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	ECT 301	LINEAR INTEGRATED CIRCUITS	3-1-0	4	4
B	ECT 303	DIGITAL SIGNAL PROCESSING	3-1-0	4	4
C	ECT 305	ANALOG AND DIGITAL COMMUNICATION	3-1-0	4	4
D	ECT 307	CONTROL SYSTEMS	3-1-0	4	4
E 1/2	HUT300	INDUSTRIAL ECONOMICS AND FOREIGN TRADE	3-0-0	3	3
	HUT310	MANAGEMENT FOR ENGINEERS	3-0-0	3	3
F	MCN301	DISASTER MANAGEMENT	2-0-0	2	--
S	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
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.
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.

*Amma*

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## Semester VI

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	ECT 302	ELECTROMAGNETICS	3-1-0	4	4
B	ECT 304	VLSI CIRCUIT DESIGN	3-1-0	4	4
C	ECT 306	INFORMATION THEORY AND CODING	3-1-0	4	4
D	ECTXXX	PROGRAM ELECTIVE I	2-1-0	3	3
E ½	HUT300	INDUSTRIAL ECONOMICS AND FOREIGN TRADE	3-0-0	3	3
	HUT310	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
T	ECD 334	MINIPROJECT	0-0-3	3	2
R/M/H	VAC	Remedial/Minor/Honours course	3-1-0	4**	4
TOTAL				25/29	23/27

## PROGRAM ELECTIVE I

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
D	ECT 312	Digital System Design	2-1-0	3	3
	ECT 322	Power Electronics	2-1-0		
	ECT 332	Data Analysis	2-1-0		
	ECT 342	Embedded Systems	2-1-0		
	ECT 352	Digital Image Processing	2-1-0		
	ECT 362	Introduction to MEMS	2-1-0		
	ECT 372	Quantum Computing	2-1-0		

### NOTE:

- Industrial Economics & Foreign Trade and Management for Engineers shall be offered in 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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- 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 curriculum.
- 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	10
Guide	15
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

  
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## Semester VII

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	ECT 401	WIRELESS COMMUNICATION	2-1-0	3	3
B	ECTXXX	PROGRAM ELECTIVE II	2-1-0	3	3
C	ECTXXX	OPEN ELECTIVE	2-1-0	3	3
D	MCN401	INDUSTRIAL SAFETY ENGINEERING	2-1-0	3	---
S	ECL 411	ELECTROMAGNETICS LAB	0-0-3	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 NO.	COURSES	L-T-P	HOURS	CREDIT
B	ECT 413	Optical Fiber Communication	2-1-0	3	3
	ECT 423	Computer Networks	2-1-0		
	ECT 433	Opto-electronic Devices	2-1-0		
	ECT 443	Antenna and Wave propagation	2-1-0		
	ECT 453	Error Control Codes	2-1-0		
	ECT 463	Machine Learning	2-1-0		
	ECT 473	DSP Architectures	2-1-0		

### 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 undergraduate branches offered in the college under KTU.

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SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
C	ECT 415	Mechatronics	2-1-0	3	3
	ECT 425	Biomedical Instrumentation	2-1-0		
	ECT 435	Electronic Hardware for Engineers	2-1-0		
	ECT 445	IoT and Applications	2-1-0		
	ECT 455	Entertainment Electronics	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 Noon). If a student does not opt for minor/honours programme, he/she can be given remedial class.
- 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

- 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 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 HoD or a senior faculty member, Project coordinator and project supervisor.

*Amulya*  
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## Semester VIII

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	ECT 402	INSTRUMENTATION	2-1-0	3	3
B	ECTXXX	PROGRAM ELECTIVE III	2-1-0	3	3
C	ECTXXX	PROGRAM ELECTIVE IV	2-1-0	3	3
D	ECTXXX	PROGRAM ELECTIVE V	2-1-0	3	3
E	ECT 404	COMPREHENSIVE VIVA VOCE	1-0-0	1	1
U	ECD 416	PROJECT PHASE II	0-0-12 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
B	ECT 414	Biomedical Engineering	2-1-0	3	3
	ECT 424	Satellite Communication	2-1-0		
	ECT 434	Secure Communication	2-1-0		
	ECT 444	Pattern Recognition	2-1-0		
	ECT 454	RF Circuit Design	2-1-0		
	ECT 464	Mixed Signal Circuit Design	2-1-0		
	ECT 474	Entrepreneurship	2-1-0		

### PROGRAM ELECTIVE IV

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
C	ECT 416	Modern Communication Systems	2-1-0	3	3
	ECT 426	Real Time Operating Systems	2-1-0		
	ECT 436	Adaptive Signal Processing	2-1-0		
	ECT 446	Microwave Devices and Circuits	2-1-0		
	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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Cheruthuruthy P.O. - 679 531





# Jyothi Engineering College

NAAC Accredited College with NBA Accredited Programmes\*

Approved by AICTE & affiliated to APJ Abdul Kalam Technological University

A CENTRE OF EXCELLENCE IN SCIENCE & TECHNOLOGY BY THE CATHOLIC ARCHDIOCESE OF TRICHUR  
 JYOTHI HILLS, VETTIKATTIRI P.O., CHERUTHURUTHY, THRISSUR, PIN-679531 PH : +91- 4884-259000, 274423 FAX : 04884-274777



NBA accredited B.Tech Programmes in Computer Science & Engineering, Electronics & Communication Engineering, Electrical & Electronics Engineering and Mechanical Engineering valid for the academic years 2016-2022. NBA accredited B.Tech Programme in Civil Engineering valid for the academic years 2019-2022.

## PROGRAM ELECTIVE V

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
D	ECT 418	Mechatronics	2-1-0	3	3
	ECT 428	Optimization Techniques	2-1-0		
	ECT 438	Computer Vision	2-1-0		
	ECT 448	Low Power VLSI	2-1-0		
	ECT 458	Internet of Things	2-1-0		
	ECT 468	Renewable Energy Systems	2-1-0		
	ECT 478	Organic Electronics	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/honours programme, he/she can be given remedial class.
- 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.
- 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

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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 (The evaluation committee comprises HoD or a senior faculty member, Project coordinator and project supervisor).	30
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).	40

## 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 eighth 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 the chosen area in S7 or S8. Students who have registered for B.Tech Minor in **ELECTRONICS AND COMMUNICATION** can opt to study the courses listed below:

SE ME STE R	BASKET I				BASKET II				BASKET III			
	COURS E NO.	COURSE NAME	H O U R S	C R E D I T S	COURS E NO.	COURSE NAME	H O U R S	C R E D I T S	COURS E NO.	COURSE NAME	H O U R S	C R E D I T S
S3	ECT281	ELECTRONIC CIRCUITS	4	4	ECT283	ANALOG COMMUNICATI ON	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	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
S7	ECD481	MINIPROJECT	4	4	ECD481	MINIPROJECT	4	4	ECD481	MINIPROJECT	4	4
S8	ECD482	MINIPROJECT	4	4	ECD482	MINIPROJECT	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.

APJ ABUL KALAM TECHNICAL UNIVERSITY  
M.Sc. in MCA, M.Sc. in M.Phil B.E.  
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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).
- (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 **ELECTRONICS AND COMMUNICATION ENGINEERING** can opt to study the courses listed below:

*Sukany*  
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SE ME STE R	GROUP I			GROUP II			GROUP III		
	COURS E NO.	COURSE NAME	H C O R D E R S I T	COURSE NO.	COURSE NAME	H C O R D E R S I T	COURSE NO.	COURSE NAME	H C O R D E R S I T
S4	ECT292	NANOELECTRO NICS	4 4	ECT294	STOCHASTIC PROCESSES FOR COMMUNICATION	4 4	ECT296	STOCHASTIC SIGNAL PROCESSING	4 4
S5	ECT393	FPGA BASED SYSTEM DESIGN	4 4	ECT395	DETECTION AND ESTIMATION THEORY	4 4	ECT397	COMPUTATI ONAL TOOLS FOR SIGNAL PROCESSING	4 4
S6	ECT394	ELECTRONIC DESIGN AND AUTOMATION TOOLS	4 4	ECT396	MIMO AND MULTIUSER COMMUNICATION SYSTEMS	4 4	ECT398	DETECTION AND ESTIMATION THEORY	4 4
S7	ECT495	RF MEMS	4 4	ECT497	DESIGN AND ANALYSIS OF ANTENNAS	4 4	ECT499	MULTIRATE SIGNAL PROCESSING AND WAVELETS	4 4
S8	ECD496	MINIPROJECT	4 4	ECD496	MINIPROJECT	4 4	ECD496	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 it 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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## SEMESTER I

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	MAT 101	LINEAR ALGEBRA AND CALCULUS	3-1-0	4	4
B 1/2	PHT 100	ENGINEERING PHYSICS,	3-1-0	4	4
	CYT 100	ENGINEERING CHEMISTRY	3-1-0	4	4
C 1/2	EST 100	ENGINEERING MECHANICS	2-1-0	3	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
<b>TOTAL</b>				<b>23/24 *</b>	<b>17</b>

\*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
A	MAT 102	VECTOR CALCULUS, DIFFERENTIAL EQUATIONS AND TRANSFORMS	3-1-0	4	4
B 1/2	PHT 100	ENGINEERING PHYSICS A	3-1-0	4	4
	CYT 100	ENGINEERING CHEMISTRY	3-1-0	4	4
C 1/2	EST 100	ENGINEERING MECHANICS	2-1-0	3	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 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
	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
<b>TOTAL</b>				<b>28/29</b>	<b>21</b>

### 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 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 Chemistry in one semester should attend Engineering Chemistry Lab in the same semester.

- Engineering Mechanics and Engineering Graphics shall be offered in both semesters.

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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, 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.

#### 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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SLOT	COURSE NO	COURSES	L-T-P	HOURS	CREDIT
A	MAT201	PARTIAL DIFFERENTIAL EQUATION AND COMPLEX ANALYSIS	3-1-0	4	4
B	EET201	CIRCUITS AND NETWORKS	2-2-0	4	4
C	EET203	MEASUREMENTS AND INSTRUMENTATION	3-1-0	4	4
D	EET205	ANALOG ELECTRONICS	3-1-0	4	4
E 1/2	EST200	DESIGN & ENGINEERING	2-0-0	2	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
T	EEL203	ANALOG ELECTRONICS LAB	0-0-3	3	2
R/M	VAC	REMEDIAL/MINOR COURSE	3-1-0	4 *	4
<b>TOTAL</b>				<b>26/30</b>	<b>22/26</b>

**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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SLOT	COURSE NO	COURSES	L-T-P	HOURS	CREDIT
A	MAT 204	PROBABILITY, RANDOM PROCESSES AND NUMERICAL METHODS	3-1-0	4	4
B	EET202	DC MACHINES AND TRANSFORMERS	2-2-0	4	4
C	EET204	ELECTROMAGNETIC THEORY	3-1-0	4	4
D	EET206	DIGITAL ELECTRONICS	3-1-0	4	4
E 1/2	EST200	DESIGN & ENGINEERING	2-0-0	2	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	3	2
T	EEL204	DIGITAL ELECTRONICS LAB	0-0-3	3	2
R/M/H	VAC	REMEDIAL/MINOR/HONOURS COURSE	3-1-0	4*	4
<b>TOTAL</b>				<b>26/30</b>	<b>22/26</b>

**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 doesnot opt for minor programme, he/she can be given remedial class.

  
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# Jyothi Engineering College

NAAC Accredited College with NBA Accredited Programmes\*

Approved by AICTE & affiliated to APJ Abdul Kalam Technological University

A CENTRE OF EXCELLENCE IN SCIENCE & TECHNOLOGY BY THE CATHOLIC ARCHDIOCESE OF TRICHUR

JYOTHI HILLS, VETTIKATTIRI P.O., CHERUTHURUTHY, THRISSUR, PIN-679531 PH : +91- 4884-259000, 274423 FAX : 04884-274777



NBA accredited B.Tech Programmes in Computer Science & Engineering, Electronics & Communication Engineering, Electrical & Electronics Engineering and Mechanical Engineering valid for the academic years 2016-2022. NBA accredited B.Tech Programme in Civil Engineering valid for the academic years 2019-2022.

SLOT	COURSE NO	COURSES	L-T-P	HOURS	CREDIT
A	EET301	POWER SYSTEMS I	3-1-0	4	4
B	EET303	MICROPROCESSORS AND MICROCONTROLLERS	3-1-0	4	4
C	EET305	SIGNALS AND SYSTEMS	3-1-0	4	4
D	EET307	SYNCHRONOUS AND INDUCTION MACHINES	3-1-0	4	4
E 1/2	HUT300	INDUSTRIAL ECONOMICS & FOREIGN TRADE	3-0-0	3	3
	HUT310	MANAGEMENT FOR ENGINEERS	3-0-0	3	3
F	MCN301	DISASTER MANAGEMENT	2-0-0	2	--
S	EEL331	MICROPROCESSORS AND MICROCONTROLLERS LAB	0-0-3	3	2
T	EEL333	ELECTRICAL MACHINES LAB II	0-0-3	3	2
R/M/H	VAC	REMEDIAL/MINOR/HONOURS COURSE	3-1-0	4*	4
<b>TOTAL</b>				<b>27/31</b>	<b>23/27</b>

## 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
A	EET302	LINEAR CONTROL SYSTEMS	2-2-0	4	4
B	EET304	POWER SYSTEMS II	3-1-0	4	4
C	EET306	POWER ELECTRONICS	3-1-0	4	4
D	EETXXX	PROGRAM ELECTIVE I	2-1-0	3	3
E 1/2	HUT300	INDUSTRIAL ECONOMICS & FOREIGN TRADE	3-0-0	3	3
	HUT310	MANAGEMENT FOR ENGINEERS	3-0-0	3	3
F	EET308	COMPREHENSIVE COURSE WORK	1-0-0	1	1
S	EEL332	POWER SYSTEMS LAB	0-0-3	3	2
T	EEL334	POWER ELECTRONICS LAB	0-0-3	3	2
R/M/H	VAC	REMEDIAL/MINOR/HONOURS COURSE	3-1-0	4*	4
<b>TOTAL</b>				<b>28/32</b>	<b>23/27</b>

## PROGRAM ELECTIVE I

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

### NOTE:

- 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 and Management for Engineers in S6 and vice versa.

  
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2. \*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 curriculum.**

  
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## SEMESTER VII

SLOT	COURSE NO	COURSES	L-T-P	HOURS	CREDIT
A	EET401	ADVANCED CONTROL SYSTEMS	2-1-0	3	3
B	EETXXX	PROGRAM ELECTIVE II	2-1-0	3	3
C	EETXXX	OPEN ELECTIVE	2-1-0	3	3
D	MCN401	INDUSTRIAL SAFETY ENGINEERING	2-1-0	3	---
S	EEL411	CONTROL SYSTEMS LAB	0-0-3	3	2
T	EEQ413	SEMINAR	0-0-3	3	2
U	EED415	PROJECT PHASE I	0-0-6	6	2
R/M/H	VAC	REMEDIAL/MINOR/HONOURS COURSE	3-1-0	4*	4
<b>TOTAL</b>				<b>24/28</b>	<b>15/19</b>

### PROGRAM ELECTIVE II

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

### OPEN ELECTIVES

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.

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SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
C	EET415	CONTROL SYSTEMS ENGINEERING	2-1-0	3	3
	EET425	INTRODUCTION TO POWER PROCESSING	2-1-0		
	EET435	RENEWABLE ENERGY SYSTEMS	2-1-0		
	EET445	ELECTRIC VEHICLES	2-1-0		
	EET455	ENERGY MANAGEMENT	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 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/ Design/ Feasibility;
- > 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 HoD or a senior faculty member, Project coordinator and project supervisor.

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## SEMESTER VIII

SLOT	COURSE NO	COURSES	L-T-P	HOURS	CREDIT
A	EET402	ELECTRICAL SYSTEM DESIGN AND ESTIMATION	2-1-0	3	3
B	EETXXX	PROGRAM ELECTIVE III	2-1-0	3	3
C	EETXXX	PROGRAM ELECTIVE IV	2-1-0	3	3
D	EETXXX	PROGRAM ELECTIVE V	2-1-0	3	3
T	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
<b>TOTAL</b>				<b>25/29</b>	<b>17/21</b>

### PROGRAM ELECTIVE III

SLOT	COURSE NO	COURSES	L-T-P	HOURS	CREDIT
B	EET414	ROBOTICS	2-1-0	3	3
	EET424	ENERGY MANAGEMENT	2-1-0		
	EET434	SMART GRID TECHNOLOGIES	2-1-0		
	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		

### PROGRAM ELECTIVE IV

SLOT	COURSE NO	COURSES	L-T-P	HOURS	CREDIT
C	EET416	NONLINEAR SYSTEMS	2-1-0	3	3
	EET426	SPECIAL ELECTRIC MACHINES	2-1-0		
	EET436	POWER QUALITY	2-1-0		
	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	3	3
	EET428	INTERNET OF THINGS	2-1-0		
	EET438	ENERGY STORAGE SYSTEMS	2-1-0		
	EET448	ROBUST AND ADAPTIVE CONTROL	2-1-0		
	EET458	SOLAR PV SYSTEMS	2-1-0		
	EET468	INDUSTRIAL INSTRUMENTATION & AUTOMATION	2-1-0		
	EET478	BIG DATA ANALYTICS	2-1-0		

## NOTE

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- 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.
- 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 Phase I;
  - Review and finalization of the Approach to the Problem relating to the assigned topic;
  - Detailed Analysis/Modelling/Simulation/Design/Problem Solving/Experiment as needed;

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- ▶ 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

(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 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.

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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 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 ELECTRICAL & ELECTRONICS ENGINEERING** can opt to study the courses listed below:

S e m e s t e r	BASKET I			BASKET II			BASKET III					
	Course No.	Course Name	H O U R S	C R E D I T	Course No.	Course Name	H O U R S	C R E D I T	Course No.	Course Name	H O U R S	C R E D I T
S3	EET281	ELECTRIC CIRCUITS	4	4	EET 283	INTRODUCTION TO POWER ENGINEERING	4	4	EET 285	DYNAMIC CIRCUITS AND SYSTEMS	4	4
S4	EET 282	ELECTRICAL MACHINES	4	4	EET 284	ENERGY SYSTEMS	4	4	EET 286	PRINCIPLES OF INSTRUMENTATION	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
S6	EET 382	POWER SEMICONDUCTOR DRIVES	4	4	EET 384	INSTRUMENTATION AND AUTOMATION OF POWER PLANTS	4	4	EET 386	DIGITAL CONTROL	4	4

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S7	EED 481	MINIPROJECT	4	4	EED 481	MINIPROJECT	4	4	EED 481	MINIPROJECT	4	4
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 Cheruthuruthy P.O.-679 531





# Jyothi Engineering College

NAAC Accredited College with NBA Accredited Programmes\*

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S8	EED 482	MINIPROJECT	4	4	EED 482	MINIPROJECT	4	4	EED 482	MINIPROJECT	4	4
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## 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 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.

- (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).

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- (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 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.
- (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. For example: Students who have registered for **B.Tech Honours in ELECTRICAL & ELECTRONICS ENGINEERING** can opt to study the courses listed below:

Semester	GROUP I			GROUP II			GROUP III		
	Course No	Course Name	CREDITS	Course No	Course Name	CREDITS	Course No	Course Name	CREDITS
S4	EET292	NETWORK ANALYSIS AND SYNTHESIS	4 4	EET 292	NETWORK ANALYSIS AND SYNTHESIS	4 4	EET 292	NETWORK ANALYSIS AND SYNTHESIS	4 4
S5	EET393	DIGITAL SIMULATION	4 4	EET 393	DIGITAL SIMULATION	4 4	EET 393	DIGITAL SIMULATION	4 4
S6	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
S7	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
S8	EED496	MINIPROJECT	4 4	EED 496	MINIPROJECT	4	EED 496	MINIPROJECT	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 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 it 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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## SEMESTER I

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	MAT 101	LINEAR ALGEBRA AND CALCULUS	3-1-0	4	4
B 1/2	PHT 110	ENGINEERING PHYSICS	3-1-0	4	4
	CYT 100	ENGINEERING CHEMISTRY	3-1-0	4	4
C 1/2	EST 100	ENGINEERING MECHANICS	2-1-0	3	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
<b>TOTAL</b>				<b>23/24 *</b>	<b>17</b>

\*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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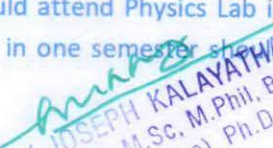
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## SEMESTER II

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	MAT 102	VECTOR CALCULUS, DIFFERENTIAL EQUATIONS AND TRANSFORMS	3-1-0	4	4
B 1/2	PHT 110	ENGINEERING PHYSICS B	3-1-0	4	4
	CYT 100	ENGINEERING CHEMISTRY	3-1-0	4	4
C 1/2	EST 100	ENGINEERING MECHANICS	2-1-0	3	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 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
	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
<b>TOTAL</b>				<b>28/29</b>	<b>21</b>

### 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 S1 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

  
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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, 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.

#### 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, Purposeful 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 ANALYSIS	3-1-0	4	4
B	MET201	MECHANICS OF SOLIDS	3-1-0	4	4
C	MET203	MECHANICS OF FLUIDS	3-1-0	4	4
D	MET205	METALLURGY & MATERIAL SCIENCE	3-1-0	4	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	MEL201	COMPUTER AIDED MACHINE DRAWING	0-0-3	3	2
T	MEL203	MATERIALS TESTING LAB	0-0-3	3	2
R/M	VAC	REMEDIAL/MINOR COURSE	3-1-0	4**	4
<b>TOTAL</b>				<b>26/30</b>	<b>22/26</b>

### 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	CREDIT
A	MAT202	PROBABILITY, STATISTICS AND NUMERICAL METHODS	3-1-0	4	4
B	MET202	ENGINEERING THERMODYNAMICS	3-1-0	4	4
C	MET204	MANUFACTURING PROCESS	3-1-0	4	4
D	MET206	FLUID MACHINERY	3-1-0	4	4
E 1/2	EST200	DESIGN AND ENGINEERING	2-0-0	2	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
R/M/ H	VAC	REMEDIAL/MINOR/HONORS COURSE	3-1-0	4*	4
<b>TOTAL</b>				<b>26/30</b>	<b>22/26</b>

### 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	CREDI T
A	MET301	MECHANICS OF MACHINERY	3-1-0	4	4
B	MET303	THERMAL ENGINEERING	3-1-0	4	4
C	MET305	INDUSTRIAL & SYSTEMS ENGINEERING	3-1-0	4	4
D	MET307	MACHINE TOOLS AND METROLOGY	3-1-0	4	4
E 1/2	HUT300	INDUSTRIAL ECONOMICS AND FOREIGN TRADE	3-0-0	3	3
	HUT310	MANAGEMENT FOR ENGINEERS	3-0-0	3	3
F	MCN301	DISASTER MANAGEMENT	2-0-0	2	--
S	MEL331	MACHINE TOOLS LAB-II	0-0-3	3	2
T	MEL333	THERMAL ENGINEERING LAB-I	0-0-3	3	2
R/M/H	VAC	REMEDIAL/MINOR/HONORS COURSE	3-1-0	4*	4
<b>TOTAL</b>				<b>27/31</b>	<b>23/27</b>

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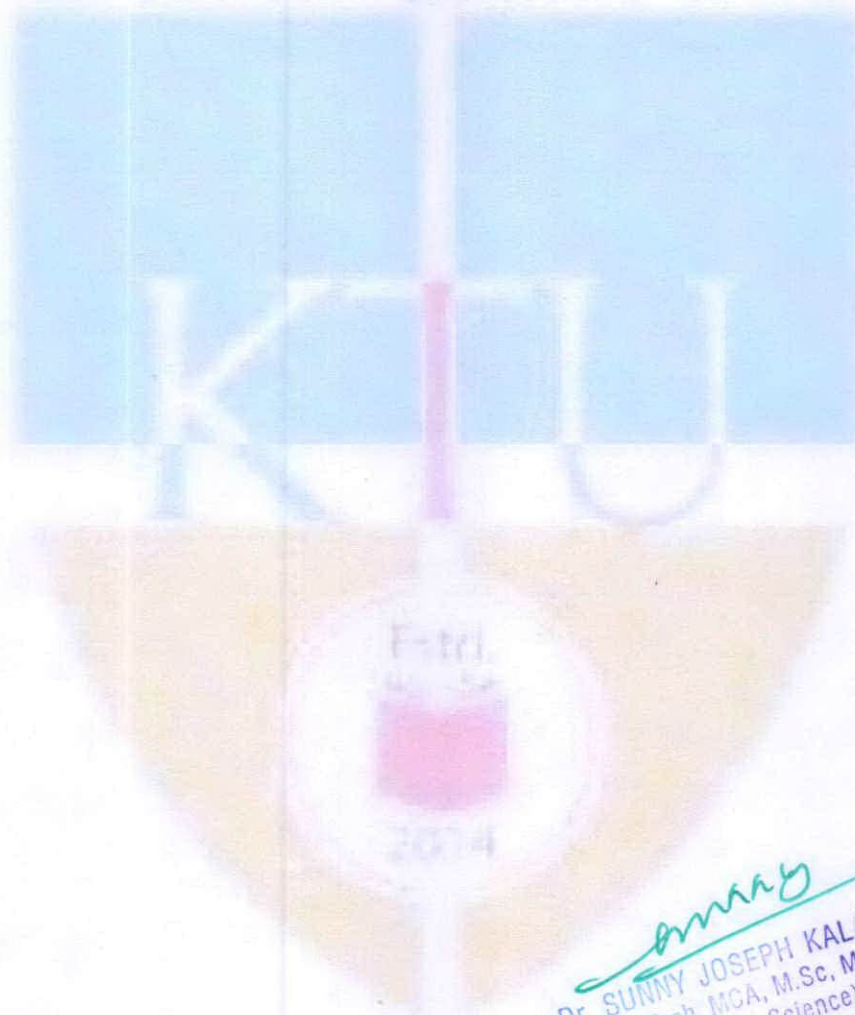
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2. **\*\*All Institutions should keep 4 hours exclusively for Remedial class/Minor/Honours course (Tuesdays from 2 to 4 PM and Wednesdays from 2 to 4 PM). If a student does not opt for minor/honors programme, he/she can be given remedial class.**
3.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



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## SEMESTER VII

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	MET401	DESIGN OF MACHINE ELEMENTS	2-1-0	3	3
B	METXXX	PROGRAM ELECTIVE II	2-1-0	3	3
C	METXXX	OPEN ELECTIVE	2-1-0	3	3
D	MCN401	INDUSTRIAL SAFETY ENGINEERING	2-1-0	3	---
S	MEL411	MECHANICAL ENGINEERING LAB	0-0-3	3	2
T	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
<b>TOTAL</b>				<b>24/28</b>	<b>15/19</b>

### PROGRAM ELECTIVE II

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
B	MET413	ADVANCED METHODS IN NONDESTRUCTIVE TESTING	2-1-0	3	3
	MET423	OPTIMIZATION TECHNIQUES AND APPLICATIONS	2-1-0		
	MET433	FINITE ELEMENT METHOD	2-1-0		
	MET443	AEROSPACE ENGINEERING	2-1-0		
	MET453	HYBRID AND ELECTRIC VEHICLES	2-1-0		
	MET463	OPERATIONS MANAGEMENT	2-1-0		
	MET473	AIR CONDITIONING AND REFRIGERATION	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 MECHANICAL ENGINEERING for students of

*Amang*  
 SUNNY JOSE, M.Sc, M.Phil, B.Ee  
 M.Tech (Mech), Ph.D (Mech)  
 Ph.D (Computer Science)  
 PRINCIPAL  
 Jyothi Engineering College





# Jyothi Engineering College

NAAC Accredited College with NBA Accredited Programmes\*

Approved by AICTE & affiliated to APJ Abdul Kalam Technological University

A CENTRE OF EXCELLENCE IN SCIENCE & TECHNOLOGY BY THE CATHOLIC ARCHDIOCESE OF TRICHUR  
 JYOTHI HILLS, VETTIKATTIRI P.O, CHERUTHURUTHY, THRISSUR, PIN-679531 PH : +91- 4884-259000, 274423 FAX : 04884-274777



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SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
C	MET415	INTRODUCTION TO BUSINESS ANALYTICS	2-1-0	3	3
	MET425	QUANTITATIVE TECHNIQUES FOR ENGINEERS	2-1-0		
	MET435	AUTOMOTIVE TECHNOLOGY	2-1-0		
	MET445	RENEWABLE ENERGY ENGINEERING	2-1-0		
	MET455	QUALITY ENGINEERING AND MANAGEMENT	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 Noon). If a student does not opt for minor/honours programme, he/she can be given remedial class.
- 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	10
Guide	20
Technical Content of the Report	30
Presentation	40

- 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

*Anand*  
 Dr. SUNNY JOSEPH R. ALAYATHANKAL  
 M.Tech, MCA, M.Ed, M.Phil, B.Ed  
 (Computer Science), Ph.D (Maths)  
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Feasibility;

- 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 HoD or a senior faculty member, Project coordinator and project supervisor.

*Anoop*  
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## SEMESTER VIII

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	MET402	MECHATRONICS	2-1-0	3	3
B	METXXX	PROGRAM ELECTIVE III	2-1-0	3	3
C	METXXX	PROGRAM ELECTIVE IV	2-1-0	3	3
D	METXXX	PROGRAM ELECTIVE V	2-1-0	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
<b>TOTAL</b>				<b>25/28</b>	<b>17/21</b>

### PROGRAM ELECTIVE III

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
B	MET414	QUALITY MANAGEMENT	2-1-0	3	3
	MET424	DECISIONS WITH METAHEURISTICS	2-1-0		
	MET434	PRESSURE VESSEL AND PIPING DESIGN	2-1-0		
	MET444	COMPUTATIONAL FLUID DYNAMICS	2-1-0		
	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	L-T-P	HOURS	CREDIT
C	MET 416	COMPOSITE MATERIALS	2-1-0	3	3
	MET 426	ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING	2-1-0		
	MET 436	ACOUSTICS AND NOISE CONTROL	2-1-0		
	MET 446	HEAT TRANSFER EQUIPMENT DESIGN	2-1-0		
	MET 456	ROBOTICS AND AUTOMATION	2-1-0		
	MET 466	TECHNOLOGY MANAGEMENT	2-1-0		

*Anany*  
**SHINNY JOSEPH KALAYATHANKAL**  
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MET 476	CRYOGENIC ENGINEERING	2-1-0	
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*Sunny*  
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## PROGRAM ELECTIVE V

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
D	MET 418	RELIABILITY ENGINEERING	2-1-0	3	3
	MET 428	INDUSTRIAL INTERNET OF THINGS	2-1-0		
	MET438	FRACTURE MECHANICS	2-1-0		
	MET 448	GAS TURBINES AND JET PROPULSION	2-1-0		
	MET 458	ADVANCED ENERGY ENGINEERING	2-1-0		
	MET 468	ADDITIVE MANUFACTURING	2-1-0		
	MET 478	POWER PLANT ENGINEERING	2-1-0		

## NOTE

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- 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.
- 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/ Experimentation/ Testing/ etc. as needed;
  - Final development of product/process, testing, results, conclusions and future.

DR. BINNY JOSÉPH KALAYATHANKAL  
 M.Tech., M.Sc., M.Phil., B.Ed  
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- (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 MECHANICAL ENGINEERING Branch** can opt to study the courses listed below:

S e m e s t e r	BASKET I			BASKET II			BASKET III		
	Course No.	Course Name	H O R E U R D S I T	Course No.	Course Name	H O R E U R D S I T	Course No.	Course Name	H O R E U R D S I T
S3	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	MANUFACTURING TECHNOLOGY	4 4
S5	MET381	DYNAMICS OF MACHINES	4 4	MET383	THERMAL ENGINEERING	4 4	MET385	MACHINE TOOLS ENGINEERING	4 4
S6	MET382	MACHINE DESIGN	4 4	MET384	HEAT TRANSFER	4 4	MET386	INDUSTRIAL ENGINEERING	4 4
S7	MED481	MINIPROJECT	4 4	MED481	MINIPROJECT	4 4	MED481	MINIPROJECT	4 4
S8	MED482	MINIPROJECT	4 4	MED482	MINIPROJECT	4 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 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.

Dr. SURESH K. P. PRINCIPAL  
M.Tech, MCA, M.Phil, B.Ed  
Ph.D (Computer Science), Ph.D (Maths)  
Engineering College  
679 531





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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.

SE ME STE R	GROUP I				GROUP II				GROUP III			
	Course No.	Course Name	H O U R S	C O U R S E S I T	Course No.	Course Name	H O U R S	C O U R S E S I T	Course No.	Course Name	H O U R S	C O U R S E S I T
S4	MET292	CONTINUUM MECHANICS	4	4	MET294	ADVANCED MECHANICS OF FLUIDS	4	4	MET296	MATERIALS IN MANUFACTURING	4	4

Dr. SUNNY JOSE, Ph.D. (Mechanical Engineering), MCA, M.Sc. (Phil), B.Ed., Ph.D. (Computer Science), PRINCIPAL, Jyothi Engineering College, Trichur, PIN-679531





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S5	MET393	EXPERIMENT AL STRESS	4	4	MET395	ADVANCED THERMODYNA	4	4	MET397	FLUID POWER	4	4
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*Sunny*  
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		ANALYSIS			MICS				AUTOMATION			
S6	MET394	ADVANCED DESIGN SYNTHESIS	4	4	MET396	COMPRESSIBLE FLUID FLOW	4	4	MET398	ADVANCED NUMERICAL CONTROLLED MACHINING	4	4
S7	MET495	ADVANCED THEORY OF VIBRATIONS	4	4	MET497	COMPUTATIONAL METHODS IN FLUID FLOW & HEAT TRANSFER	4	4	MET499	PRECISION MACHINING	4	4
S8	MED496	MINIPROJECT	4	4	MED496	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 it as concerned citizens of the world

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