



# **School of Engineering and Technology**

## **Department of Electronics and Communication Engineering**

### **Course Structure**

**BTech- Electronics and Computer Engineering [with Spl.  
In Artificial Intelligence and Machine Learning]**

**2020-24**

Christ University, Bengaluru  
Karnataka, India  
[www.christuniversity.in](http://www.christuniversity.in)

Course Structure for BTech- Electronics and Computer Engineering [with Spl. In Artificial Intelligence and Machine Learning] for batch 2020-24 prepared by the Department of Electronics and Communication Engineering, School of Engineering and Technology and approved by the Academic Council, Christ University, Bengaluru, India.

Published by the Centre for Publications, Christ University, Hosur Road, Bengaluru 560 029, India. [publications@christuniversity.in](mailto:publications@christuniversity.in)

2020

## **1. INTRODUCTION**

CHRIST- Deemed to be University blossomed out of the educational vision of the Carmelites of Mary Immaculate (CMI) congregation founded by St Kuriakose Elias Chavara. He was a visionary, an educationist and a social reformer of the nineteenth century who founded the Congregation in 1831 in South India.

CHRIST- Deemed to be University was established in July 1969 as Christ College. It was the first institution in Karnataka to be accredited by the National Assessment and Accreditation Council (NAAC). University Grants Commission (UGC) conferred Autonomy to the institution in 2004. It became the first College in South India to be reaccredited with A+ by NAAC in 2005. UGC identified it as an Institution with Potential for Excellence in 2006. Under Section 3 of the UGC Act, 1956, Ministry of Human Resources Development of the Union Government of India, vide Notification No. F. 9-34/2007-U.3 (A), declared Christ College as a Deemed to be University, in the name and style of CHRIST- Deemed to be University in July 2008. The University was accredited with 'A' Grade by NAAC in 2016.

CHRIST- Deemed to be University offers 46 Bachelor, 47 Master, 16 MPhil and 17 PhD Programs in Humanities, Social Sciences, Sciences, Commerce and Management, Education, Law and Engineering. The University which celebrates diversity has students from all the states of India and 58 countries across the globe.

CHRIST- Deemed to be University rooted in Gospel values, is committed to provide holistic education through the development of intellectual competence, personal skills, inter-personal skills and societal skills. The University welcomes to its fold students from all over the country and the world in an environment of religious harmony and secularism.

## VISION

### "EXCELLENCE AND SERVICE"

- ❖ CHRIST- Deemed to be University, a premier educational institution, is an academic fraternity of individuals dedicated to the motto of excellence and service. We strive to reach out to the star of perfection through an earnest academic pursuit for excellence and our efforts blossom into 'service' through our creative and empathetic involvement in the society to transform it.
- ❖ Education prepares one to face the challenges of life by bringing out the best in him/her. If this is well accepted, education should be relevant to the needs of the time and address the problems of the day. Being inspired by Blessed Kuriakose Elias Chavara, the founder of Carmelites of Mary Immaculate and the pioneer in innovative education, CHRIST- Deemed to be University was proactive to define and redefine its mission and strategies reading the signs of the time.

### MISSION STATEMENT

"CHRIST- Deemed to be University is a nurturing ground for an individual's holistic development to make effective contribution to the society in a dynamic environment."

### CORE VALUES

The values which guide us at CHRIST- Deemed to be University are:

**Faith in God**

**Moral Uprightness**

**Love of Fellow Beings**

**Social Responsibility**

**Pursuit of Excellence**

### DEPARTMENT VISION

To emerge as a centre of academic excellence in the field of Electronics & Communication Engineering to address the dynamic needs of the industry upholding moral values

### DEPARTMENT MISSION

- Impart in-depth knowledge in Electronics & Communication Engineering to achieve academic excellence.
- Develop an environment of research to meet the demands of evolving technology.
- Inculcate ethical values to promote team work and leadership qualities befitting societal requirements.
- Provide adaptability skills for sustaining in the dynamic environment.

### PROGRAM EDUCATIONAL OBJECTIVES OF B.TECH IN ECE

PEO1 : Domain Knowledge

Apply the knowledge of Electronics & Communication Engineering to analyse, design and develop solutions for real time engineering problems

PEO2 : Research Oriented

Be competent to pursue higher learning and research

PEO3: Ethics & Teamwork

Assimilate technical skills with professional ethics

PEO4 : Life Long Learning

Be passionate to attain professional excellence through lifelong learning

**COURSE STRUCTURE**  
**I SEMESTER - CHEMISTRY CYCLE**

Sl. No	Course No	Course Name	Hours			Total Marks	Credits			Total Credits
			L	T	P		L	T	P	
1	MA131	Mathematics - II	3	0	0	100	3	0	0	3
2	CH132P	Chemistry	3	0	2	100	3	0	1	4
3	EC133P	Basic Electronics	3	0	2	100	3	0	1	4
4	CS134P	Computer Programming	3	0	2	100	3	0	1	4
5	ME135	Basic Mechanical Engineering and Nanoscience	3	0	0	100	3	0	0	3
6	TE136P	Technical English	1	0	2	100	1	0	1	2
7	ME151	Workshop Practice Lab	0	0	2	50	0	0	1	1
8	HE171	Holistic Education-II	1	0	0	---	1	0	0	1
		Total				650				22

**II SEMESTER - PHYSICS CYCLE**

Sl. No	Course No	Course Name	Hours			Total Marks	Credits			Total Credits
			L	T	P		L	T	P	
1	MA231	Mathematics - II	3	0	0	100	3	0	0	3
2	PH232P	Physics	3	0	2	100	3	0	1	4
3	EE233P	Basic Electrical Engineering	3	0	2	100	3	0	1	4
4	CE234P	Basics of Civil Engineering & Engineering Mechanics	3	0	2	100	3	0	1	4
5	EG235P	Engineering Graphics	2	0	2	100	2	0	1	3
6	BS 236	Biology for Engineers	2	0	0	100	2	0	0	2
7	HE271	Holistic Education-II	1	0	0	---	1	0	0	1
		Total				600				21

**III SEMESTER**

Sl. No	Course No	Course Name	Hours			Total Marks	Credits			Total Credits
			L	T	P		L	T	P	
1	MA335	Mathematics for Intelligent Systems	3	0	0	100	3	0	0	3
2	ECE332	Data Structures and Applications	3	0	2	100	3	0	1	4
3	ECE333	Digital System Design	3	0	2	100	3	0	1	4
4	ECE334	Object oriented Concepts	3	0	0	100	3	0	0	3
5	ECE335	Computer Organization and Processors	3	0	0	100	3	0	0	3
6	HS335	Professional Ethics	2	0	0	100	2	0	0	2
7	BTCY01	Cyber Security	2	0	0	----	0	0	0	0
	HE371	Holistic Education-III	1	0	0		1	0	0	1
		Total				600				20

**IV SEMESTER**

Sl. No	Course No	Course Name	Hours			Total Marks	Credits			Total Credits
			L	T	P		L	T	P	
1	ECE431	Neural Networks	3	0	0	100	3	0	0	3
2	ECE432	Design and Analysis of Algorithms	3	0	0	100	3	0	0	3
3	ECE433	Data Base Management System	3	0	0	100	3	0	0	3
4	ECE434	Microcontroller based System Design	3	0	2	100	3	0	1	4
5	ECE435	Signals and Systems	3	0	0	100	3	0	0	3
6	ECE436	Programming Language Paradigm	3	0	0	100	3	0	0	3
7	BS451	Engineering Biology Laboratory	0	0	2	100	0	0	1	1
8	MCO1	Environmental Science	2	0	0	----				
9	HE471	Holistic Education-IV	1	0	0	----	1	0	0	1
		Total				700				21

**V SEMESTER**

Sl. No	Course No	Course Name	Hours			Total Marks	Credits			Total Credits
			L	T	P		L	T	P	
1	ECE531	Analog and Digital Communication	3	0	2	100	3	0	1	4
2	ECE532	Big Data Analytics	3	0	2	100	3	0	1	4
3	ECE533	Artificial Intelligence and Machine learning	3	0	0	100	3	0	0	3
4		Open Elective-1	3	0	0	100	3	0	0	3
5	ECE535	Program Elective-1	3	0	0	100	3	0	0	3
7	ECE536	Project Management & Finance	3	0	0	100	3	0	0	3
8	MCO2	Constitution of India	0	0	0	---	0	0	0	0
		Total				600				20

**VI SEMESTER**

Sl. No	Course No	Course Name	Hours			Total Marks	Credits			Total Credits
			L	T	P		L	T	P	
1	ECE631	Embedded System Design	3	0	2	100	3	0	1	4
2	ECE632	Digital Signal Processing	3	0	2	100	3	0	1	4
3	ECE633	Computer Networks	3	0	0	100	3	0	0	3
4	ECE634	Pattern Recognition	3	0	0	100	3	0	0	3
5		Open Elective -2 (GE)	2	0	0	100	2	0	0	2
7	EC671	Mini Project/Electronic Design workshop	0	0	4	50	0	0	2	2
		Total				550				18

**VII SEMESTER**

Sl. No	Course No	Course Name	Hours			Total Marks	Credits			Total Credits
			L	T	P		L	T	P	
1	ECE731	Real Time Computer Vision with OpenCV	3	0	0	100	3	0	0	3
2	ECE732	Program Elective-2	3	0	0	100	3	0	0	3
3	ECE733	Program Elective-3	3	0	0	100	3	0	0	3
4	ECE734	Program Elective-4	3	0	0	100	3	0	0	3
5		Open Elective-3	3	0	0	100	3	0	0	3
6	ECE736	Service Learning	1	0	2	---	1	0	1	2
7	EC771	Internship	0	0	4	50	0	0	2	2
						550				19

**VIII SEMESTER**

Sl. No	Course No	Course Name	Hours			Total Marks	Credits			Total Credits
			L	T	P		L	T	P	
1	ECE831	Program Elective-5	3	0	0	100	3	0	0	3
2	ECE871	Project Work	0	0	24	300	0	0	12	12
						400				15



**Program Elective-1**

SL No.	Course Code	Course Name
1	ECE436E1	Software Engineering
2	ECE436E2	Operating systems
3	ECE436E3	JAVA Programming

**Program Elective-2**

SL No.	Course Code	Course Name
1	ECE535E1	Electromagnetic Fields
2	ECE535E2	Control Systems
3	ECE535E3	VLSI Design
4	ECE535E4	Medical Electronics

**Program Elective-3**

SL No.	Course Code	Course Name
1	ECE634E1	Web Programming
2	ECE634E2	Cloud Computing and Grid Computing
3	ECE634E3	Software Quality Management
4	ECE634E4	Python for Machine Learning

**Program Elective - 4**

SL No.	Course Code	Course Name
1	ECE733E1	Transmission Lines and Waveguides
2	ECE733E2	Microwave Engineering
3	ECE733E3	Electromagnetic Interference and Compatibility
4	ECE733E4	Microstrip Antennas
5	ECE733E5	Computational Electromagnetics
6	ECE733E6	Reliability Of Electronics Systems
7	ECE733E7	Telecommunication System Modeling and Simulation
8	ECE733E8	Satellite Communication
9	ECE733E9	Radar and Navigational Aids
10	ECE733E10	Optical Fiber Communication

**Program Elective - 5**

<b>SL No.</b>	<b>Course Code</b>	<b>Course Name</b>
1	ECE734E1	Mobile Application Development
2	ECE734E2	Natural Language Processing
3	ECE734E3	Database Administration
4	ECE734E4	Software Testing
5	ECE734E5	Web Services and Service Oriented Architecture
6	ECE734E6	Pattern Recognition and Machine Learning

**OPEN ELECTIVES OFFERED BY DEPARTMENT OF ECE**

<b>SI No</b>	<b>Course Name</b>
1	Sensors and Transducers
2	Industrial Instrumentation
3	Automotive Electronics
4	Telecommunication Infrastructure & Management
5	Consumer Electronics
6	Microwave for Engineers
7	Fundamentals of Signal Processing
8	Fundamentals of Image Processing
9	NEMS and MEMS for Engineers
10	Embedded Boards for IoT Applications
11	System Design & Measurement using LabVIEW
12	Basics of VLSI for Engineers
13	Computerized Control System