

**Department of Electronics and Telecommunication Engg.**  
**CO – PO Mapping**

**Class: - SY**

**Course: - Engineering Mathematics III- (Sem. III)  
(BTBS301)**

**Course Educational Objectives (CEO):**

1	To develop logical understanding of the subject.
2	To develop mathematical skill so that students are able to apply mathematical methods and principals in solving problem from Engineering fields.
3	To make aware students about the importance and symbiosis between Mathematics and Engineering.

**Course Outcomes:**

CO	On completion of the course, students will be able to:	Unit	Bloom s Level	PO
301.1	Understand and apply the properties of Laplace Transform and Fourier Transform.	1,2,3	2,3	1,2
301.2	Formulate partial differential equation and solve it for real word problem.	4	2,6	1,2
301.3	Analyse and map different complex functions and Solve integration of complex function by using Cauchy's integral formula.	5	3,4	1,2

**CO PO Mapping (Engineering Mathematics III)**

Course Outcome	Programme Outcome (PO)													
	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02
301.1	√	√												
301.2	√	√												
301.3	√	√												

**CO PO Mapping Emphasis (Engineering Mathematics III)**

CO	Programme Outcome (PO)													
	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02
301.1	3	2												
301.2	3	2												
301.3	3	2												

1. Poor

2. Moderate

3. High



**Course Objectives:**

1. To acquaint the students with the fundamental principles of two-valued logic and various devices used to implement logical operations on variables.
2. To lay the foundation for further studies in areas such as communication, VHDL, computer.

**Course Outcomes:**

On completion of the course, students will be able to:

1. Use the basic logic gates and various reduction techniques of digital logic circuit in detail.
2. Design combinational and sequential circuits.
3. Design and implement hardware circuit to test performance and application.
4. Understand the architecture and use of VHDL for basic operations and Simulate using simulation software.

**Correlation between (mapping) the course outcomes & the program outcomes:**

		Program Outcomes													
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Course Outcomes	1			√			√		√			√			√
	2		√	√	√			√		√				√	√
	3	√		√		√	√								
	4					√				√	√			√	

## BTES304

S.Y. (Electronics and Telecommunication Engineering)

Semester- III

### Electrical Machines and Instruments

#### Course Objectives:-

1. Model and Analyze the performance of different types of DC machines
2. Learn the applications of DC generators
3. Analyze the performance of different types of DC motors
4. Analyze the performance of different types of Sensors and Transducers
5. Familiarize with the applications of DC machines
6. To prepare students to perform the analysis of any electromechanical system.
7. To empower students to understand the working of electrical equipment used in everyday life.

#### Course Outcomes:-

1. The ability to formulate and then analyze the working of any electrical machine using mathematical model under loaded and unloaded conditions.
2. The skill to analyze the response of any electrical machine.
3. The ability to troubleshoot the operation of an electrical machine.
4. The ability to select a suitable measuring instrument for a given application.
5. The ability to estimate and correct deviations in measurements due to the influence of the instrument and due to the accuracy of the instrument.

#### Correlation between (mapping) the course outcomes & the program outcomes:

		Program Outcomes												
		a	b	c	d	e	f	g	h	i	j	k	PSO 1	PSO 2
Course Outcomes	1	√	√			√	√	√		√		√		√
	2	√	√			√	√	√		√		√	√	
	3	√	√					√		√		√		
	4	√	√					√		√		√		√
	5	√	√			√		√		√		√	√	

**BTETC401**  
 S.Y. (Electronics and Telecommunication Engineering)  
 Semester-IV  
**NETWORK THEORY**

**Course Objectives:-**

1. To learn about the basic laws of electric circuits as well as the key fundamentals of the communication channels, namely transmission lines.
2. To understand the need of simplification techniques of complicated circuits
3. To learn about the comprehensive insight into the principle techniques available for characterizing circuits, networks and their implementation in practice.
4. To learn about the use of mathematics, need of different transforms and usefulness of differential equations for analysis of networks.
5. To train the students for handling analog filter design through theory of NA along with practical, this is basic requirement of signal processing field.

**Course Outcomes:-**

1. Apply knowledge of mathematics to solve numerical based on network simplification and it will be used to analyze the same.
2. Design passive filters and attenuators theoretically and practically. To apply knowledge for design of active filters as well as digital filters and even extend this to advance adaptive filters.
3. Identify issues related to transmission of signals, analyze different RLC networks.
4. Find technology recognition for the benefit of the society.

**Correlation between (mapping) the course outcomes & the program outcomes:**

		Program Outcomes												
		a	b	c	d	e	f	g	h	i	j	k	P S O 1	P S O 2
Course Outco mes	1	√	√	√		√			√	√		√		√
	2	√	√	√		√			√	√			√	
	3	√	√	√					√	√		√		√
	4	√	√	√		√			√	√		√	√	

BTETC402  
 SY (Electronics & Telecommunication Engineering)  
 Semester -II  
**SIGNALS & SYSTEMS**

**Course Objectives:**

1. To understand the mathematical description of continuous and discrete time signals and systems.
2. To classify signals into different categories.
3. To analyze Linear Time Invariant (LTI) systems in time and transform domains.
4. To build basics for understanding of courses such as signal processing, control system and communication.

**Course Outcomes:**

On completion of the course, students will be able to:

1. Understand mathematical description and representation of continuous and discrete time signals and systems.
2. Develop input output relationship for linear shift invariant system and understand the convolution operator for continuous and discrete time system.
3. Understand and resolve the signals in frequency domain using Fourier series and Fourier transforms.
4. Understand the limitations of Fourier transform and need for Laplace transform and develop the ability to analyze the system in s-domain.

**Correlation between (mapping) the course outcomes & the program outcomes**

		Program Outcomes												
		a	b	c	d	e	f	g	h	i	j	k	P S O 1	P S O 2
Course Outcomes	1	√	√	√		√				√				
	2	√	√	√		√			√	√		√		√
	3	√	√	√		√			√	√		√	√	
	4	√	√	√		√			√	√		√		

**Course Objectives:**

- 1.To train the young minds facing the challenges of the pluralistic society and the rising conflicts and tensions in the name of particularistic loyalties to caste, religion, region and culture.
- 2.To give knowledge of the major "signposts" in the historical development of human rights, the range of contemporary declarations, conventions, and covenants.
- 3.To enable them to understand the basic concepts of human rights (including also discrimination, equality, etc.), the relationship between individual, group, and national rights.
- 4.To develop sympathy in their minds for those who are denied rights.
- 5.To make the students aware of their rights as well as duties to the nation

**Course Outcomes:**

1. Students will be able to understand the history of human rights.
2. Students will learn to respect others caste, religion, region and culture.
3. Students will be aware of their rights as Indian citizen.
4. Students will be able to understand the importance of groups and communities in the society.
5. Students will be able to realize the philosophical and cultural basis and historical perspectives of human rights.

**Mapping of Course Outcomes with Program Outcomes:**

		Program Outcomes													
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
<b>Course Outcomes</b>	<b>1</b>	√								√					
	<b>2</b>	√							√	√					
	<b>3</b>	√							√	√	√				
	<b>4</b>	√								√	√				
	<b>5</b>	√								√	√				



**BTETPE405C- Computer Organization and Architecture**  
**Class:S.Y.(E&Tc.Engg.)**

**Course Objectives:**

1. To introduce basic concepts of computer organization and to illustrate the computer organization concepts by Assembly Language programming.
2. To understand operating systems and how they work with the computer and students will understand the relationship between hardware and software specifically how machine organization impacts the efficiency of applications written in a high-level language.
3. Students will be able to make use of the binary number system to translate values between the binary and decimal number systems, to perform basic arithmetic operations and to construct machine code instructions and students will be able to design and implement solutions for basic programs using assembly language.
4. Students will be able to design logical expressions and corresponding integrated logic circuits for a variety of problems including the basic components of a CPU such as adders, multiplexers, the ALU, a register file, and memory cells and to explain the fetch-execute cycle performed by the CPU and how the various components of the data path are used in this process.

**Course Outcomes:**

At the end of this course students will demonstrate the ability to

1. learn how computers work
2. know basic principles of computers working
3. analyze the performance of computers
4. know how computers are designed and built.

**Mapping of Course Outcomes with Program Outcomes:**

		Program Outcomes													
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Course Outcomes	CO1	√	√	√							√		√	√	√
	CO2	√	√	√							√		√	√	√
	CO3	√	√	√	√						√		√	√	√
	CO4	√	√	√	√						√		√	√	√
	CO5	√	√	√							√		√	√	√

**Electronics and Telecommunication Engg.****Subject- Analog Communication****Class – T.Y. B Tech. Sem-VI****Course Objectives**

1. To introduce the students with Analog communication.
2. To define AM modulation, analyze and solve problems on AM modulation.
3. To define FM modulation, analyze and solve problems on FM modulation.
4. To study different types of Radio receiver.
5. To study AM and FM detector circuits.
6. To study and classify different types of noise and solve problems on it.

**Course Outcomes**

Students will be able to

1. Explain the fundamental concepts and various components of analog communication systems.
2. Analyze and explain amplitude modulation schemes.
3. Analyze and explain various angle modulation schemes.
4. Explain various blocks of Radio receiver and examine its performance parameters.
5. Explain and compare various AM and FM detector techniques.
6. Discuss various sources of noise and solve numerical on it.

**CO-PO Mapping**

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12	PO 13
CO1	√											√	
CO2	√	√								√			
CO3	√	√								√			
CO4		√		√									
CO5		√										√	
CO6	√	√	√		√		√						√

**Course Objectives:**

1. The concept and theory of digital Electronics are needed in almost all electronics and telecommunication engineering fields and in many other engineering and scientific disciplines as well.
2. The main objective of this course is to lay the foundation for further studies in areas such as communication, VLSI, computer, microprocessor etc. One of the most important reasons for the unprecedented growth of digital electronics is the advent of integrated circuit.
3. This course will explore the basic concepts of digital electronics.

**Course outcomes:**

At the end of this course students will demonstrate the ability to

1. Design and analyze combinational logic circuits
2. Design & analyze modular combinational circuits with MUX/DEMUX, Decoder, Encoder
3. Design & analyze synchronous sequential logic circuits.
4. Use HDL & appropriate EDA tools for digital logic design and simulation.

**Course outcome –Program Outcome Mapping**

		Program Outcomes													
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
<b>Course Outcomes</b>	<b>1</b>			√			√		√			√			√
	<b>2</b>		√		√			√		√				√	√
	<b>3</b>	√		√		√	√						√		
	<b>4</b>									√	√			√	

**CO-PO correlation in terms of emphasis value:**

		Program Outcomes													
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
<b>Course Outcomes</b>	<b>1</b>	-	-	3	-	-	3	-	1	-	-	2	-	-	2
	<b>2</b>	-	3	-	2	-	-	3	-	2	-	-	-	3	2
	<b>3</b>	3	-	3	-	2	3	-	-	-	-	-	2	-	-
	<b>4</b>	-	-	-	-	-	-	-	-	-	3	2	-	-	3

**Course Objectives:**

1. To introduce the elements of control system and their modeling using various Techniques.
2. To introduce methods for analyzing the time response, the frequency response and the stability of systems.
3. To introduce the concept of root locus ,Bode plots, Nyquist plots.
4. To introduce the state variable analysis method.
5. To introduce concepts of PID controllers and digital and control systems.
6. To introduce concepts programmable logic controller.

**Course Outcomes:**

At the end of this course, students will demonstrate the ability to

1. Understand the modeling of linear-time-invariant systems using transfer function and state-space representations.
2. Understand the concept of stability and its assessment for linear-time invariant systems.
3. Design simple feedback controllers.

**Mapping of Course Outcomes with Program Outcomes:**

		Program Outcomes													
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
<b>Course Outcomes</b>	<b>1</b>	√	√										√		√
	<b>2</b>	√	√	√									√	√	√
	<b>3</b>	√	√	√									√	√	√

## COURSE DETAILS

**Course Code: BTETC601 Subject: Antennas and Wave Propagation**

Course Objectives:

- 1) To understand the basic properties of Plane wave propagation in different medium.
- 2) Introduce the student to wave propagation over ground, through troposphere and ionosphere; diversity principles
- 3.) Students will be introduced to antennas, their principle of operation with Antenna analysis and their applications.
- 4) Analysis of wire antennas with complete analytical Treatment
- 5 )Develop the concepts of antenna arrays and their applications.
- 6) To have Knowledge on Antenna operations and type as well as their use in real time

**Course Outcomes:**

1. To understand the basic properties of Plane wave propagation in different medium, and to learn EM wave propagation in transmission line. Obtain an understanding of Maxwell's equations and be able to apply them to solving practical electromagnetic fields problems.
2. Examine the phenomena of wave propagation in different media and its interfaces and Characterize Uniform plane waves.
3. Define various antenna parameters and Analyze radiation patterns of antennas
4. Understand and Analyze Wire Antennas
5. Analyze antenna arrays, wire and aperture antennas.
6. To understand the various applications of antennas

**CO-PO MAPPING**

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12	PSO 1	PSO2
CO1	√												√	
CO2	√			√										√
CO3	√	√	√	√	√							√		√
CO4	√	√		√									√	
CO5	√	√	√	√								√	√	
CO6	√			√								√		



**Course Objectives:**

1. To study HDL based design approach.
2. To learn digital CMOS logic design.
3. To nurture students with CMOS analog circuit designs.
4. To realize importance of testability in logic circuit design.
5. To overview SoC issues and understand PLD architectures with advanced features.

**Course Outcomes:**

After successfully completing the course, students will be able to

1. Model digital circuit with HDL, simulate, synthesis and prototype in PLDs.
2. Understand chip level issues and need of testability.
3. Design analog & digital CMOS circuits for specified applications

**Course outcome –Program Outcome Mapping**

		Program Outcomes													
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Course Outcomes	1			√			√		√			√			√
	2		√		√			√		√				√	√
	3	√		√		√	√						√		

**CO-PO correlation in terms of emphasis value:**

		Program Outcomes													
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Course Outcomes	1	-	-	3	-	-	3	-	1	-	-	2	-	-	2
	2	-	3	-	2	-	-	3	-	2	-	-	-	3	2
	3	3	-	3	-	2	3	-	-	-	-	-	2	-	-

TY (Electronics & Telecommunication Engineering)  
Semester –VI  
**COMPUTER NETWORK**

Teaching Scheme:

Examination

Scheme:

Lectures: 3 Hrs/Week

Theory: 60 Marks

Tutorial: 1Hr./Week

TW: 40 Marks

**Course Objectives:** The course aims to:

1. Provide an introduction to networking concepts, topologies.
2. Explain Various Transmission Media & Network Devices.
3. Elaborate Concepts of Datalink Layer.
4. Describe various routing algorithms and congestion control mechanism.
5. Comprehend TCP/IP Protocol suite.
6. Explain network security mechanism.

**.Course Outcomes:** Upon successful completion of this course, the student will be able to:

1. Describe and differentiate types of networks such as LAN, WAN, MAN and network topologies like star, bus, ring etc. Explain and distinguish between OSI and TCP/IP reference model
2. Summarizes guided & unguided transmission media and different networking devices used at physical layer.
3. Explain error detection & correction mechanisms and frame formats at data link layer.
4. Explain various routing algorithms like shortest path, distance vector, link state etc and congestion control algorithms viz. leaky bucket, token bucket used at network layer.
5. Illustrate different TCP/IP protocols like IP, ARP, RARP, TCP, UDP etc.
6. Demonstrate the network Security Mechanisms.

**.Course outcome –Program Outcome Mapping**

		Program Outcomes													
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
<b>Course Outcomes</b>	<b>1</b>	-	√	-	-	√	-	-	-	-	-	-	-	√	-
	<b>2</b>	-	√	-	-	-	-	√	-	-	-	-	-	-	-
	<b>3</b>	-	-	√	√	-	√	-	-	-	-	-	-	√	-
	<b>4</b>	-	-	-	-	-	-	√	-	-	-	-	-	√	√
	<b>5</b>	-	-	√	-	√	√	-	-	-	√	-	-	√	√
	<b>6</b>	-	-	-	-	-	-	-	√	-	-	-	-	√	√

## BTHM605

T.Y. (Electronics and Telecommunication Engineering)

Semester-VI

### Employability & Skill Development

#### Course Objectives:-

1. To develop analytical abilities.
2. To develop communication skills.
3. To introduce the students to skills necessary for getting, keeping and being successful in a profession.
4. To expose the students to leadership and team-building skills.

#### Course Outcomes:-

1. Have skills and preparedness for aptitude tests.
2. Be equipped with essential communication skills (writing, verbal and non-verbal)
3. Master the presentation skill and be ready for facing interviews.
4. Build team and lead it for problem solving.

#### Correlation between (mapping) the course outcomes & the program outcomes:

		Program Outcomes												
		a	b	c	d	e	f	g	h	i	j	k	PSO 1	PSO 2
Course Outcomes	1	√	√	√		√			√	√		√	√	√
	2	√				√			√	√				
	3	√	√	√						√		√		√
	4	√	√	√		√			√	√		√	√	



B.Tech. (Electronics & Telecommunication Engineering)

Semester –VII

### SATELLITE COMMUNICATION

Teaching Scheme:

Examination

Scheme:

Lectures: 3 Hrs/Week

Theory: 60 Marks

Tutorial: 1 Hrs/week

TW: 40Marks

#### Course Objectives:

1. To introduce the fundamental concept in the field of satellite communication.
2. To enable the student know how to place satellite in orbit.
3. To know the concept of space subsystem.
4. To analyze, design and evaluate satellite communication subsystem.
5. To examine concept of satellite networking.

**Course Outcomes:** Upon successful completion of this course, the student will be able to

1. Understand Orbital aspects involved in satellite communication.
2. Understand Power budget calculation..
3. Understand Satellite system and services provided.
4. Analyze the performance satellite communication system.

#### Course outcome –Program Outcome Mapping

		Program Outcomes													
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Course Outcomes	1				√				-			√			
	2	√	√		√	√			-	√					√
	3	√		√			√	√	-	√			√		
	4	√		√		√	√		-		√			√	√

