BHARATI VIDYAPEETH'S
COLLEGE OF ENGINEERING, KOLHAPUR

Name of Department: Electronics and Telecommunication

Class:-Second Year B.TECH Sem:-III

Course:-BSC-ETC 301: Engineering Mathematics –III

Course Outcomes:

1 Make use of Linear Differential Equations to solve the Electrical Engineering problems.

2 Apply knowledge of vector differentiation to find directional derivatives, curl and divergence of vector fields.

3 Define fuzzy sets using linguistic words and represent these sets by membership functions, convexity, Normality, support, etc.

4 Develop Fourier series expansion of a function over the given interval.

5 Find Laplace transforms of given functions and use it to solve linear differential equations.

6 Solve basic problems in probability theory, including problems involving the binomial, Poisson, and normal distributions

BHARATI VIDYAPEETH'S
COLLEGE OF ENGINEERING, KOLHAPUR

Name of Department: Electronics and Telecommunication

Class:-Second Year B.TECH Sem:-III

Course: PCC-ETC 301 Electronic Circuit Design – I

Course Outcomes:

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

1 Analyze and design electronic circuits such as rectifiers & unregulated power Supply.

2 Analyze and design electronic circuits such as regulated power supply.

3 Analyze & Design of BJT & FET Biasing.

4 Explain the hybrid model of transistor and analyze the transistor amplifier (CE, CB, CC) using H-parameters

5 Analysis of CE Amplifier for low frequency & High frequency response for Sinusoidal & square wave input.

6 Analyze & Design LPF, HPF, Clipper, Clampers, Multipliers

BHARATI VIDYAPEETH'S
COLLEGE OF ENGINEERING, KOLHAPUR

Name of Department: Electronics and Telecommunication

Class:-Second Year B.TECH Sem:-III

Course:- PCC-ETC 302 Network Analysis

Course outcomes: Student should be able to

1 Apply the techniques to obtain the circuit response with efficient and unique solutions.

2 Understand and apply the network theorems.

3 Solve the problems related with the 2 port n/w, draw pole-zero plot and determine then stability.

4 Design different parameters of R-L-Resonant circuits.

5 Design const.-k and m derived filters and compare performance of different types of Attenuators

6 Design and analyses transient response of R-L-C circuit

BHARATI VIDYAPEETH'S
COLLEGE OF ENGINEERING, KOLHAPUR

Name of Department: Electronics and Telecommunication
Class:-Second Year B.TECH Sem:-III
Course Name: PCC-ETC 303 Transducers and Measurements

Course Outcomes:

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

1 Explain principle of operation of different sensors & transducers and will be able to Use it for measurement of digital parameters.

2 Describe signal conditioning & data acquisition system.

3 Demonstrate testing & measuring instruments

4 Compare various display devices for appropriate application

5 Distinguish AC & DC bridges

BHARATI VIDYAPEETH'S
COLLEGE OF ENGINEERING, KOLHAPUR

Name of Department: Electronics and Telecommunication

Class:-Second Year B.TECH Sem:-III

Course Name: PCC-ETC 304: Analog Communication

Course Outcomes:

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

1 Explain and identify the fundamental concept of analog communication systems.

2 Compare various analog modulation schemes.

3 Interpret the performance of analog communications systems under the presence of noise and Explain the operations of various receiver systems

4 Define Sampling theorem & differentiate between various pulse modulation techniques

BHARATI VIDYAPEETH'S
COLLEGE OF ENGINEERING, KOLHAPUR

Name of Department: Electronics and Telecommunication
Class:-Second Year B.TECH Sem:-III
Course Name: PCC-ETC 305: PROGRAMMING LAB-I

Course Outcomes:

Upon successful completion of this course

1 Student will be able to understand the basic concepts of procedure oriented Programming language.

2 Student will be able to implement the control statements, looping statements and functions concepts.

3 Student will be able to design programs using user defined functions and data type.

4 Student will be able to design & apply the skills for solving the engineering Problems.

5 Students will be able to understand the concept string & relevant operations on it.

6 Students will be able to understand the concept of file & relevant operations on it

BHARATI VIDYAPEETH'S
COLLEGE OF ENGINEERING, KOLHAPUR

Name of Department: Electronics and Telecommunication
Class:-Second Year B.TECH Sem:-III
Course Name: MC-ETC 301: Environmental Studies

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

1. Get Acquainted With the Scope and Multidisciplinary Nature Of Environmental Science With The Overall Aim of Sustainable Development.
2. Understand The Importance Of Ecosystems In The View Of Its Conservation.
3. Know The Values Of Natural Resources With Associated Problems For Sustainable Lifestyles.
4. Familiarize The Basics Of Biodiversity And Concerned Issues In The Context Of Western Ghats.
5. Make Aware Of The Pollution Issues With Its Mitigation Measures.
6. Understand the Social Issues Accompanied By Environmental Issues In The Light Of Role Of Indian Culture and Movements In Conservation Of The Environment.
7. Recognize The Significance Of Policies And Legislation In Environmental Protection.
8. Acquire Problem Solving Attitude through Actual Experiential Learning in The Form Of Field Work And Projects

BHARATI VIDYAPEETH'S
COLLEGE OF ENGINEERING, KOLHAPUR

Name of Department: Electronics and Telecommunication
Class:-Second Year B.TECH Sem:-IV
Course Name: Electronic Circuit Design - II

Course Objectives:

The course aims to:

1 Provide an introduction and basic understanding of feedback amplifiers, power

Amplifiers, oscillators, Multivibrators

2 Develop student ability to apply basic engineering sciences to understand the

Operation & analysis of electronic circuits using diodes, bipolar junction transistors.

3 Provide analog electronic circuit design techniques using diodes, bipolar junction transistors and to develop analytical skills.

4 Design electronic circuits to meet desired specifications.

5 Apply knowledge of mathematics, science, and

6. Engineering to design, analyze and implement electronic circuits.

BHARATI VIDYAPEETH'S
COLLEGE OF ENGINEERING, KOLHAPUR

Name of Department: Electronics and Telecommunication

Class:-Second Year B.TECH Sem:-IV

Course Name: Linear Integrated Circuits

Course Outcomes:

1 Explain operational amplifier with its parameters

2 Classify different configuration of op-amp

3 Identify and explain different applications of op-amp

4 Design and implement various filters

5 Analyze different waveform generator circuits

6 Apply knowledge of op-amp in various industrial application

BHARATI VIDYAPEETH'S
COLLEGE OF ENGINEERING, KOLHAPUR

Name of Department: Electronics and Telecommunication

Class:-Second Year B.TECH Sem:-IV

Course Name: PCC-ETC 403: Control System Engineering Circuits

Course Outcomes:

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

1 Apply Knowledge of Mathematics, Science, and Engineering to Design, Analyze and Control The Different Systems

2 Explain Time & Frequency Domain Analysis for Different Control Systems

3 Demonstrate & Compare Different Control Systems

4 Describe State Variables

5 Design Model for Control System

BHARATI VIDYAPEETH'S
COLLEGE OF ENGINEERING, KOLHAPUR

Name of Department: Electronics and Telecommunication

Class:-Second Year B.TECH Sem:-IV

Course Name: PCC-ETC404 Digital Communication

Course Outcomes:

Upon successful completion of this course

1. Student will be able to Describe the probability of random signal
2. Solve the problem based on information theory
3. Classify different source encoding &line encoding techniques
4. Compare different digital modulation technique

BHARATI VIDYAPEETH'S
COLLEGE OF ENGINEERING, KOLHAPUR

Name of Department : Electronics and Telecommunication

Class:-Second Year B.TECH Sem:-IV

Course Name: PCC-ETC 405: Data Structures

Course Outcomes:

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

1 Elaborate the basic concept of data structure & its types.

2 Design and Implement the various algorithms on arrays & records.

3 Implement algorithms on linked list.

4 Understand the concept of stacks, queues & its applications.

5 Construct various types of trees & their applications.

6 Understand the concept of Graph & Hashing.

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Name of Department : Electronics and Telecommunication

Class:-Second Year B.TECH Sem:-IV

Course Name: PCC-ETC 406: PL-II

Course Outcomes:

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

1 Understand the basic concepts of procedure oriented programming language.

2 Identify the function and operator overloading concepts.

3 Understand and implement the concept of inheritance, template and exception handling applications.

4 Identify the concept of inheritance, virtual functions, dynamic binding & polymorphism.

5 Identify the types of inheritance & its design for code reuse in C++.

6 Design and implement generic classes with C++ templates and exception handling.

BHARATI VIDYAPEETH'S
COLLEGE OF ENGINEERING, KOLHAPUR

Name of Department : Electronics and Telecommunication

Class:-Third Year B.TECH Sem:-V

Course:- PCC-ETC501 Signals and System

Course Outcomes:

Upon successful completion of this course, the students will be able to:

1 Demonstrate use of signals and their representation.

2 Represent CT & DT system

3 Use Fourier transform for analysis of CT & DT signals

4 Compute DFT and IDFT

5 Analyze signals using Z-transform

6 Realize the systems

BHARATI VIDYAPEETH'S
COLLEGE OF ENGINEERING, KOLHAPUR

Name of Department: Electronics and Telecommunication

Class:- Third Year B.TECH Sem:-V

Course:-PCC-ETC502: Electromagnetic Engineering

Course Outcomes:

Upon successful completion of this course, the students will be able to:

1 Explain the fundamentals of mathematical skills related with differential, integral and vector calculus.

2 Apply and analyze the concepts of steady electric & magnetic fields.

3 Develop field equations

4 Understanding of Maxwell's Equations.

5 Extend the knowledge of basic properties of transmission lines

6 To analyze electromagnetic wave propagation in generic transmission line geometries

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COLLEGE OF ENGINEERING, KOLHAPUR

Name of Department: Electronics and Telecommunication

Class:-Third Year B.TECH Sem:-V

Course:-PCC-ETC503: Digital and VLSI Design Engineering

Course Outcomes:

Upon successful completion of this course, the students will be able to:

1 Apply Boolean laws/K-Map-method, to reduce a given Boolean function

2 Design & realize combinational logic circuits using logic gates.

3 Demonstrate the operation of flip-flops, counters, shift registers Synchronous sequential machine using Moore and Mealy machine

4 Design combinational and sequential logic circuits using various description techniques in VHDL

BHARATI VIDYAPEETH'S
COLLEGE OF ENGINEERING, KOLHAPUR

Name of Department: Electronics and Telecommunication

Class:-Third Year B.TECH Sem:-V

Course:-PCC-ETC504: Optical Communication

Course Outcomes:

Upon successful completion of this course, the students will be able to:

1 Differentiate the different types of optical fiber structures and light propagating mechanisms.

2 Acquire knowledge of signal degradation mechanism in optical fiber.

3 Understand the construction of and working of optical sources and detectors.

BHARATI VIDYAPEETH'S
COLLEGE OF ENGINEERING, KOLHAPUR

Name of Department: Electronics and Telecommunication
Class:-Third Year B.TECH Sem:-V

Course:- OEC-ETC501: Industrial Automation

Course Outcomes:

Upon successful completion of this course, the students will be able to:

1 Demonstrate the working of PLC, DCS and SCADA

2 Apply the concept; analyze the importance and application of industrial automation.

3 Compile ideas into new different solutions with the help of programming languages as per IEC 61131-3.

4 Apply the knowledge of automation for design and development of Graphical user interface for different process.

5Use the advanced software tools for Industrial Automation such Codesys ,GX Works 2, RS logix 5000 , Delta V Explorer etc.

BHARATI VIDYAPEETH'S
COLLEGE OF ENGINEERING, KOLHAPUR

Name of Department: Electronics and Telecommunication

Class:-Third Year B.TECH Sem:-V

Course: PCC-ETC505: Simulation and Modeling

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

1 Understand the python programming basics

2 Able to solve programs on decision making & looping statements in python

3 Understand python list, tuple, and dictionary collection concepts

4 Understand simulation programs using SimPy Library

5 Design & Apply Simpy library functions to model real time problems.

BHARATI VIDYAPEETH'S
COLLEGE OF ENGINEERING, KOLHAPUR

Name of Department: Electronics and Telecommunication

Class:Third Year B.TECH Sem:-VI

Course: PCC-ETC 601: Digital Signal Processing

Course Outcomes:

Upon successful completion of this course, the students will be able to:

1 Make use of FFT algorithm for filtering of long duration sequences

2 Design digital FIR filters

3 Design digital IIR filters

4 Implement FIR and IIR filters using DSP Processor

5 Apply the basic concept of Multirate digital signal processing

6 Apply the basic concept of wavelet transform

BHARATI VIDYAPEETH'S
COLLEGE OF ENGINEERING, KOLHAPUR

Name of Department: Electronics and Telecommunication
Class:Third Year B.TECH Sem:-VI

Course: PCC-ETC 602: Microprocessor and Microcontroller

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

1. Describe Architecture of 8085 and write various Programs.
2. Implement Interrupts and interfacing of memory, 8255 with 8085.
3. Describe Architecture of 8051 and write various Programs.
4. Perform experiment using ON-Chip resources of 8051.
5. Select I/O peripherals to satisfy system design requirements.
6. Design Embedded „C" Programs for I/O Peripheral

BHARATI VIDYAPEETH'S
COLLEGE OF ENGINEERING, KOLHAPUR

Name of Department: Electronics and Telecommunication
Class:-Third Year B.TECH Sem:-VI

Course: PCC-ETC 603: Power Electronics

Course Outcomes:

Upon successful completion of this course, the students will be able to:

1 Understand the characteristics of various power electronics devices and Compare the different firing circuits.

2 Analyze converters, Inverters and Choppers.

3 Understand the Industrial applications of Power circuits.

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COLLEGE OF ENGINEERING, KOLHAPUR

Name of Department: Electronics and Telecommunication
Class:-Third Year B.TECH Sem:-VI
Course: PCC-ETC604: Antenna and Wave Propagation

Course Outcomes:

Upon successful completion of this course, the students will be able to:

1 Realize the importance of basics of antenna systems to

2differentiate the applicability of each type of antenna

3 Analyze the utilization of Antenna systems in wide

4areas like wireless communication, fixed line

5communication, computer communication etc.

6 Discuss radio wave propagation

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COLLEGE OF ENGINEERING, KOLHAPUR

Name of Department: Electronics and Telecommunication

Class:-Final Year B.Tech. Sem-VII

Course:-PCC-ETC701: Satellite Communication

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

1 Understand Orbital aspects involved in satellite communication.

2 Understand various subsystems in satellite communication system

3 Explain and Analyze Link budget calculation.

4 Understand Satellite Network System

5 Explain Non Geostationary Satellite Systems

6 Explain different applications of Satellite Systems

BHARATI VIDYAPEETH'S
COLLEGE OF ENGINEERING, KOLHAPUR

Name of Department: Electronics and Telecommunication

Class:-Final Year B.TECH Sem:-VII

Course:-PCC-ETC 702: Embedded Systems

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

1. Develop programs using PIC 16F877
2. Apply on-chip resource facility of PIC 16F877.
3. Understand embedded systems and concepts of ARM7.
4. Develop programs using ARM7
5. Apply on chip resource facility of LPC 2148.
6. Understand RTOS concept

BHARATI VIDYAPEETH'S
COLLEGE OF ENGINEERING, KOLHAPUR

Name of Department: Electronics and Telecommunication

Class:-Second Year B.TECH Sem:-III

Course:- PCC-ETC703 Computer Network

Course Outcomes:

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

1 State the evolution of Computer network, classifies different types of Computer Networks.

2 Design, implements, and analyzes simple computer networks.

3 Identify, formulate, and solve network engineering problems.

4 Illustrate different OSI and TCP/IP protocols.

BHARATI VIDYAPEETH'S
COLLEGE OF ENGINEERING, KOLHAPUR

Name of Department: Electronics and Telecommunication

Class: Final B.TECH Year Sem:-VII

Course: PCC-ETC704: Image processing

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

1 List fundamental steps involved in Digital Image Processing.

2 Apply different transforms and filtering techniques on an image.

3 Apply morphological operations

4 Perform image segmentation

5 Apply compression techniques.

6 Perform various operations on color image.

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Name of Department: Electronics and Telecommunication

Class:-FinalYearB.Tech Sem:-VII

Course:-PCE-ETC701: JAVA SCRIPT (ELECTIVE-I)

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

1 Identity and apply JS objects in web applications.

2 Articulate and write user define functions.

3Describe and develop user –

4rowser interactions.

5 Explain the principles of object oriented programming paradigm.

6 Use and illustrate the events, cookies and handling exceptions

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COLLEGE OF ENGINEERING, KOLHAPUR

Name of Department: Electronics and Telecommunication

Class:-Final Year B.Tech Sem:-VII

Course:- PW-ETC701 : Project Phase-I

Course Outcomes: After the completion of the course the student should be able to:

1 Identify the problem statement through literature survey for project work.

2 Develop design strategy for the project work

3 Develop presentation and interpersonal communication skills through project work.

4 Develop the ability to learn independently and to find/integrate information from different sources required in solving real-life problems.

5 enhance technical report writing skills with proper organization of materials;

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COLLEGE OF ENGINEERING, KOLHAPUR

Name of Department: Electronics and Telecommunication

Class:- Final Year B.Tech SEM:VIII

Course:- PCC-ETC-801: Microwave Engineering

Course Outcomes:

Upon successful completion of this course, the students will be able to:

1. Analyze the microwave waveguides and passive circuit components.
2 Identify and differentiate the state of art in microwave tubes and their uses in real life
3 Identify materials used in MMIC and microwave hazards
4 Differentiate solid state devices used in microwave based on their characteristics and operations
5 Measure the output power, VSWR, impedance, frequency and wavelength of microwave signal

BHARATI VIDYAPEETH'S
COLLEGE OF ENGINEERING, KOLHAPUR

Name of Department: Electronics and Telecommunication

Class:-Final Year B.Tech Sem:-VIII

Course:-PCC-ETC 802: Wireless Communication

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

1List basic fundamentals of wireless communication

2Analyze large & small scale radio wave propagation

3Able to understand basic wireless technologies

4 Able to understand and analyze wireless concept

BHARATI VIDYAPEETH'S
COLLEGE OF ENGINEERING, KOLHAPUR

Name of Department: Electronics and Telecommunication

Class:-Final Year B.Tech Sem:-VIII

Course:-PCC- ETC 803: Video Engineering

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

1 Describe picture and sound transmission and reception

2 Explain color composite video signal

3 Describe principle of digital TV system

4 Explain high definition television system

5 Elaborate concept of video conferencing and videophone.

6 Describe advanced TV system like LCD, plasma, LED, CCTV, etc.

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COLLEGE OF ENGINEERING, KOLHAPUR

Name of Department: Electronics and Telecommunication

Class:-Final Year B.TECH Sem:-VIII

Course:-PCE-ETC 801: High Performance Communication Networks (Elective II)

Course Outcomes:

Upon successful completion of this course, the students will be able to:

1 Illustrate the different communication networks using the architecture and frames format 2 Design and analyzes simple communication networks.

2 Compare various high performance networks.

3 Develop and research on various networks and its interoperability.