Chhattisgarh Swami Vivekanand Technical University, Bhilai

Scheme of Teaching and Examination
B.E. V SEMESTER

ELECTRONICS AND TELECOMMUNICATION ENGINEERING

Sl. No.	Board of Study	Code No.	Subjects	Period Per Week			Scheme of Examination			Total Marks	Credit L+(T+P)/2
							Theory/ Practical				
				L	T	P	ESE	CT	TA		
1	Electronics & Telecommunication	**328551(28)**	Linear Integrated Circuits &Applications	3	1	-	80	20	20	120	4
2	Electronics & Telecommunication	**328552(28)**	Data Structures and Programming with C++	3	1	-	80	20	20	120	4
3	Electronics & Telecommunication	**328553(28)**	Antennas and Wave Propagation	3	1	-	80	20	20	120	4
4	Electronics & Telecommunication	**328554(28)**	Digital Communication	3	1	-	80	20	20	120	4
5	Electronics & Telecommunication	**328555(28)**	Advanced Microprocessor and Interfacing	3	1	-	80	20	20	120	4
6	Electronics & Telecommunication	**328556(28)**	Automatic Control System	3	1	-	80	20	20	120	4
7	Electronics & Telecommunication	**328561(28)**	Linear Integrated Circuits &Applications Lab	-	-	3	40	-	20	60	2
8	Electronics & Telecommunication	**328562(28)**	Data Structures and Programming with C++ Lab	-	-	4	40	-	20	60	2
9	Electronics & Telecommunication	**328563(28)**	Digital Communication Lab	-	-	4	40	-	20	60	2
10	Electronics & Telecommunication	**328564(28)**	Advanced Microprocessor and Interfacing Lab	-	-	2	40	-	20	60	1
11	Humanities	**300565(46)**	Personality Development	-	-	2	-	-	20	20	1
12	Electronics & Telecommunication	**328566(28)**	*Practical Training Evaluation and Library	**-**	**-**	1	-	-	20	20	1
TOTAL				**18**	**6**	**16**	**640**	**120**	**240**	**1000**	**33**

L: Lecture **T:** Tutorial **P:** Practical
ESE: End Semester Examination **CT:** Class Test **TA:** Teacher's Assessment

**** Industrial Training of eight weeks is mandatory for B.E. student. It is to be completed in two parts. The first part will be in summer after IV sem. after which students have to submit a training report which will be evaluated by the college teachers during B.E. V sem.***

Name of the Programme: Bachelor of Engineering :::: Duration of the Programme: Four Years

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Branch:	**Electronics & Telecommunication Engineering**	Semester:	**V**
Subject:	**Linear Integrated Circuits & Application**	Code:	**328551(28)**
Total Theory Periods:	**40**	Total Tutorial Periods:	**10**
No. of class Tests to be conducted:	**2 (Minimum)**	No. of assignments to be submitted:	**2 (Minimum)**
ESE Duration:	**Three Hours**	Maximum Marks in ESE: **80**	Minimum Marks in ESE: **28**

Course Objectives:

1. To design simple circuits like amplifiers using op-amps.
2. To design linear and non-linear applications of operational amplifiers.
3. To Gain knowledge about A/D and D/A converters
4. To gain knowledge in designing a stable voltage regulators
5. To introduce the theory and applications of analog multipliers and PLL.

Course Outcomes:

1. Gain knowledge about Differential amplifier and operational amplifier.
2. Designing circuits for op-amp applications.
3. Gain knowledge about A/D and D/A converters.
4. Get knowledge about various types of voltage regulator.
5. Understand PLL circuits and multiplier circuits.

UNIT I **Fundamentals of differential amplifiers and operational amplifiers:** Current mirror, BJT differential amplifier analysis using r-parameters. Introduction to operational amplifier : op-amp Symbol and terminal characteristics, Block schematic of op-amp, Ideal op-amp characteristics, Open loop configuration of op-amp, Closed loop configuration of op-amp: Voltage series feedback amplifier, Voltage shunt feedback amplifier, Differential amplifier. The practical op-amp: Input offset voltage, Input bias current, Input offset current, Total output offset voltage, Thermal drift. Frequency response of an op-amp: Frequency response, Compensating networks, Slew rate.

UNIT II **Operational amplifier applications:Basic op-amp circuits:** Summing, Scaling and Averaging amplifiers. Comparator: Inverting and Non-inverting comparator, Schmitt trigger, Zero crossing detector, Peak detector, Level detector, Window detector, Rectifier: Precision half wave rectifier, Precision full wave rectifier, Current to voltage and Voltage to current converter, Bridge amplifier; Instrumentation amplifier. Differentiator, Integrator, Logarithmic amplifier, Norton amplifier.

UNIT III **Analog to digital and digital to analog converters:** Sample and hold circuits and sample and hold IC (LF 398), Types of D/A converter : The binary weighted resistor network, The R-2R ladder network, The inverted ladder, D/A specification. A/D converter : Parallel-comparator type, Dual slope, Successive approximation, Voltage to time and Voltage to frequency converters, A/D specification.

UNIT IV **Voltage Regulators:** Voltage regulator characteristics, Regulator performance parameters, Types of voltage regulator: Series and Shunt regulator using op-amp. Safe operating Area, Protection circuit: Short circuit protection, Current limiting circuit, Foldback current limiting, Three terminal IC regulator: Three terminal IC regulator(LM 317, LM 337, 78XX, 79XX) [Description, Schematic diagram and Pin diagram], General purpose IC regulator (723): Important features and Internal structure.

UNIT V **PLL and multiplier:Phase Locked Loops:** Introduction, Basic principle. Phase detector: Analog and Digital**,** Voltage controlled oscillator, PLL IC 565: Functional diagram and Principle of operation, Derivation of lock-in and capture Range. Application of PLL (AM detection, FM detection, FSK demodulation and frequency synthesizer).

Analog Multipliers and Dividers: Analog Multiplier: Introduction,Characteristics. Multiplication techniques: Logarithmic summing, PWM, Variable transconductance. Monolithic multiplier circuit realization: Logarithmic - Exponential multiplier circuit (RC-4200). Multiplier application: Divider circuit, Square rooting circuit, RMS detector.

Name of Text Book:

1. Integrated Circuits by K. R. Botkar, 9th Ed., Khanna Publications (Unit- I,II,III,IV,V)
2. Operational Amplifiers by R. Gayekwad, 4th Ed., Pearson Education(Unit-I, II.IV)
3. Linear Integrated Circuits by D.Roy Choudhary and Shail B Jain,3rd Ed., New Age International (Unit-IV,V)
4. Digital integrated Electronics by Herbert Taub and Donald Schilling, McGraw Hill(Unit- III)

Name of Reference Books:

1. Integrated Electronics by Millman& Halkias,6th Ed., TMH Publishing Co.
2. Operational Amplifiers and Linear Integrated Circuits, Lal Kishore,2nd Ed., PHI
3. Operational Amplifiers and Linear Integrated Circuits, Coughlin and Driscoll, 6th Ed., PHI

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Branch:	**Electronics & Telecommunication Engineering**	Semester:	**V**
Subject:	**Data Structure &Programming with C ++**	Code:	**328552(28)**
Total Theory Periods:	**40**	Total Tutorial Periods:	**10**
No. of class Tests to be conducted:	**2 (Minimum)**	No. of assignments to be submitted:	**2 (Minimum)**
ESE Duration:	**Three Hours**	Maximum Marks in ESE: **80**	Minimum Marks in ESE: **28**

CourseObjectives:

1. To gain a better understanding of object-oriented design and program implementation by using object-oriented features of C++.
2. Identify the major elements in an object-oriented programming language.
3. Understand some advanced features of C++ including templates, exceptions, and multiple inheritances.

Course Outcomes:

1. Understand algorithmic thinking and apply it to programming.
2. Understand problem-solving techniques.
3. Understand object-oriented concepts and how they are supported by C++.
4. Gain some practical experience of C++.

UNIT I **Principles of Object Oriented Programming:** Basic Concepts of Object Oriented Programming, Benefits of OOPs, Classes and Objects: C Structures Revisited, Specifying a Class, Defining Member Functions, Making an Outside Function Inline, Nesting of Member Functions, Private Member Functions, Arrays Within a Class, Memory Allocation for Objects, Static Data M embers, Static Member Functions, Arrays of Objects, Objects as Function Arguments, Friendly Functions, Returning Objects. Constructors and Destructors: Constructors, Parameterized Constructors, Multiple Constructors in a Class, Constructors with Default Arguments, Dynamic Initialization of Objects, Copy Constructor, Destructors.

UNIT II **Operator Overloading and Inheritance:** Defining Operator Overloading, Overloading Unary Operators, Overloading Binary Operators, Overloading Binary Operators Using Friends, Manipulation of Strings Using Operators, Rules for Overloading Operators, Function Overloading, Defining Derived Classes, Single Inheritance, Making a Private Member Inheritable, Multilevel Inheritance, Multiple Inheritance, Hierarchical inheritance, Virtual Base Classes, Abstract Classes.

UNIT III **Pointers and Runtime Binding:** Pointers and their Binding, Address Operator &, Pointer Variables, Void Pointers, Pointer Arithmetic, Runtime Memory Management, Pointers to Pointers, This Pointer, Introduction to Virtual Functions, Need for Virtual Functions, Pointer to Derived Class Objects, Definition of Virtual Functions, Array of Pointers to Base Class Objects, Pure Virtual Functions, Abstract Classes

UNIT IV **Introduction to Data Structures:** Searching: Linear Search, Binary Search, Sorting: Insertion Sort, Bubble Sort and Selection Sort, Introduction to Linked Lists, Stacks and Queues.

UNIT V **Files and Streams:** Classes for File Stream Operations, Opening and Closing a File, Detecting end-of-file, More about Open:File Modes, File Pointers and Their Manipulations, sequential Input and Output Operations, Updating a File: Random Access, Error Handling During File Operations, Command-line Arguments, Introduction to Templates and Exception Handling.

Text Books:

1. Object oriented Programming with C++, E Balaguruswamy, 3rd Edition, Mcgraw-Hill .(Unit I, II & V)
2. Mastering C++, K.R.Venugopal, Raj Kumar and T.Ravi Shankar , Mcgraw-Hill. (Unit III)
3. Theory and Problems of Data Structures, Seymour Lipschutz, Schaum's Outline Series. (Unit IV)

Reference Books:

1. C++ Complete Reference, H. Schildt , Mcgraw-Hill.
2. Object Oriented Programming in Turbo C++, Robert Lafore, Galgotia Pub.
3. C++ Primer plus, Stephen Prata, Galgotia Pub
4. The C++ Programming Language, Bjarne Stroustrup, Pearson

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Branch:	**Electronics & Telecommunication Engineering**	Semester:	**V**
Subject:	**Antennas and Wave Propagation**	Code:	**328553(28)**
Total Theory Periods:	**40**	Total Tutorial Periods:	**10**
No. of class Tests to be conducted:	**2 (Minimum)**	No. of assignments to be submitted:	**2 (Minimum)**
ESE Duration:	**Three Hours**	Maximum Marks in ESE: **80**	Minimum Marks in ESE: **28**

Course outcome:

1. Students will be able to understand the guided and unguided wave propagation.
2. Students will acquire knowledge of Basic antennas, their radiation and characteristics.
3. Students will knowledge of antenna arrays and their design.
4. Students will able to understand some different practical antennas.

Course Objectives:

1. To study uniform plane wave propagation in different media and wave polarization
2. To study guided wave propagation in metallic wave guides
3. To study radio wave propagation
4. To study the concept of radiation and analyze radiation characteristics of a current element and dipole
5. To study antenna fundamentals and antenna arrays: uniform and tapered and their design
6. To study some practical antennas like Rhombic, Loop, Yagi and microstrip antenna.

UNIT – I **Waveguides:** Wave propagation between two infinite parallel conducting plane: TE and TM modes; Properties of TE and TM modes, TEM waves; Rectangular and Circular waveguides: TE and TM modes, dominant modes, characteristics: attenuation and phase constants, phase and group velocities, cut-off wavelengths and frequencies, guide wavelength, field pattern and wave impedance.

UNIT – II **Wave Propagation:** Sky wave, surface wave and space wave; Ionospheric propagation- refractive index at high frequencies; Mechanism of radio wave bending, critical frequency; effect of earth's magnetic field; Effective dielectric constants and conductivity, MUF, skip distance, optimum working frequency; Multihop propagation; Ionoshperic abnormalities; Troposhperic propagation, field strength of troposhperic wave; Effect of earth's curvature and dielectric constant; Troposhperic scatter and Duct propagation.

UNIT – III **Antennas and Radiation:** Electromagnetic radiation; Retarded potentials; Short electric dipole, radiation from a small current element, radiated power and radiation resistance; Radiation from a half wave dipole and its radiation resistance; Isotropic radiator; radiation pattern; Radiation Intensity; Antenna Gain: directive gain and power gain; Antenna directivity; Effective length and effective aperture of antennas; Beamwidth; Bandwidth; Beam area; FBR, Self impedance of antennas, Antenna efficiency; Reciprocity theorem and its application.

UNIT – IV **Antenna Arrays and their design:** Various form of array: broadside, end fire, collinear and parasitic arrays; Arrays of two isotropic point sources; Principle of pattern multiplication; Linear arrays with 'n' isotropic point sources of equal amplitude and spacing: broadside and end fire case; Tapering of arrays: Binomial and Dolph Tchebysceff array.

UNIT – V **Practical Antennas:** Effect of earth on antenna performance; Grounded and ungrounded antennas; Antenna top loading and tuning; Resonant and non-resonant antennas; Beverage antenna;Tower radiator; Long-wire antenna; V-antenna; Rhombic antenna; Loop antenna and Adcock antenna; Yagi antenna; Log periodic antenna; Horn and Microstrip antenna.

Name of Text Books:

1. Engineering Electromagnetic, William H. Hyat, Jr. John A. Buck 7th Ed. TMH, 2006. (Unit: I)
2. Antennas and Wave Propagation, K. D. Prasad, Satya Prakashan, 3rd Ed., 2001.(Unit: I, II, III,IV &V)

Name of Reference Books:

1. Antenna Theory, Balanis, 2nd Edition, John Wiley & Sons, 2003.
2. Antenna and Wave Propagation, R.L. Yadava, PHI, 2011.
3. Antenna and Wave Propagation, G. S. N. Raju, , 5th Impression, Pearson, 2011.
4. Antennas and Radio Propagation, R.E.Collins, McGraw-Hill, 1987.
5. "Antennas", John D.Kraus and Ronalatory Marhefka, Tata McGraw-Hill Book, 2002.

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Branch:	**Electronics & Telecommunication Engineering**	Semester:	**V**
Subject:	**Digital Communication**	Code:	**328554 (28)**
Total Theory Periods:	**40**	Total Tutorial Periods:	**10**
No. of class Tests to be conducted:	**2 (Minimum)**	No. of assignments to be submitted:	**2 (Minimum)**
ESE Duration:	**Three Hours**	Maximum Marks in ESE: **80**	Minimum Marks in ESE: **28**

Course Objectives:

1. To study signal space representation of signals and discuss the process of sampling, quantization that are fundamental to the digital transmission of analog signals.
2. To study baseband and band pass signal transmission and reception techniques.
3. To study digital modulation methods and optimum receiver.
4. To study the noise in digital communication, correlator, optimum filter, matched filter.

Course outcome:

1. Design digital communication systems, given constraints on data rate, bandwidth, power, fidelity, and complexity.
2. Analyze the performance of a digital communication when additive noise is present in terms of the signal-to-noise ratio and bit error rate.

UNIT I **Pulse modulation system and quantization:** Sampling theorem: Low pass signal, Band-pass signal, TDM-PAM, Channel bandwidth for PAM signal, Natural sampling, Flat-top sampling, Signal recovery through holding, PWM, PPM. **Quantization:** Quantization of signals, Quantization error, PCM, TDM-PCM system, Companding, Multiplexing: T1 Digital Systems, Multiplexing T1 Lines-The T2, T3, T4 Lines.

UNIT II **Digital transmission of analog data:** DPCM, Delta modulation, Adaptive delta modulation, Continuously variable slope delta modulator (CVSD).
Noise in PCM and DM: PCM transmission: Calculation of quantization noise power, Output signal power, Output SNR in PCM. Delta modulation transmission: Quantization noise in delta modulation, Output signal power, DM signals to quantization noise ratio.

UNIT III **Principle of digital data transmission:** Digital communication system, Line coding: PSD of various line codes, Polar signalling, On-Off signalling, Bipolar signalling, Pulse shaping: Nyquist criterion for zero ISI, Scrambling, Regenerative repeater: Eye diagram, Detection error probability for polar signal, ON-Off and bipolar signals.

UNIT IV **Digital modulation techniques:** Fundamentals of BASK, BPSK and BFSK, Generation, detection, spectrum and geometrical representation of BPSK and BFSK, Fundamentals of DPSK, DEPSK and QPSK, Generation and detection of DPSK, DEPSK and QPSK, Signal space representation of QPSK.
M-ary PSK.

UNIT V **Optimum reception of digital data:** Baseband signal receiver, Probability of Error, Optimum receiver for both baseband and passband: Optimum filter transfer function, Optimum filter realization using matched filter, probability of error of the matched filter. Optimal of coherent reception: Calculation of probability of error for BPSK, BFSK and QPSK.

Name of Text Book:

1. Principles of communication system by Taub& Schilling, 3rd Ed., McGraw-Hill Education (unit I, unit II, unit IV, unit V)
2. Modern Digital and Analog Communication Systems by B.P. Lathi,3rd Ed., Oxford university press (unit III)

Reference books

1. Fundamentals of communication systems by John.G. Proakis, Pearson education, 2006.
2. Communication system by A. Bruce Carlson, Paul Crilly, Paul B. Crilly, McGraw-Hill Education
3. Digital communications by Simon Haykin, Wiley India Private Limited,2006.

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Branch:	**Electronics & Telecommunication/Electronics & Instrumentation/Applied Electronics & Instrumentation**	Semester:	**V**
Subject:	**Advanced Microprocessors & Interfacing**	Code:	**328555 (28)**
Total Theory Periods:	**40**	Total Tutorial Periods:	**10**
No. of class Tests to be conducted:	**2 (Minimum)**	No. of assignments to be submitted:	**2 (Minimum)**
ESE Duration:	**Three Hours**	Maximum Marks in ESE: **80**	Minimum Marks in ESE: **28**

Course Objectives:

1. To learn the functional and technological characteristics of 8086 microprocessor.
2. Understand about memory components, peripherals and their interface.
3. Enable the students to understand the general and advanced features of 16/32 bit microprocessors

Course Outcomes:

1. Gain knowledge about architecture of advance microprocessors.
2. Demonstrate the ability to program the 8086 microprocessor.
3. Interface the 8086 microprocessor to the outside world.
4. Understand multiprocessor systems and learn about co-processors.

UNIT I **Architecture of 8086:** Differences Between 8085 and 8086, Overview of 8086 Microprocessor Family, Architecture and Pin Configuration of 8086, System Bus Structure: Basic 8086/8088 system bus architecture, Minimum Mode Configuration, Maximum Mode configuration; System Bus Timings, Bus Standards. 8087 Numeric Data Processor& 8089 I/O Processor: Architecture only (no Programming)

UNIT II **Instruction Set and Assembly Language Programming of 8086:** Instruction Format; Addressing modes, Data Transfer Instruction, Arithmetic Instructions, Branching and Looping Instructions, NOP and Halt, Flag Manipulation Instructions, Logical, Shift and Rotate Instruction. Byte and String Manipulation: String Instructions; REP Prefix, Table Translation, Number Format conversions. Assembler Directives and Operators, Translation of Assembler Instructions. Programming of Microprocessor8086, Interrupts of Microprocessor 8086.

UNIT III **Interfacing – I (With 8086 only):** Memory interfacing, Interrupt Priority Management System based on 8259A, Interfacing of 8254 (Programmable Interval Timer), Interfacing of 8257and 8251 with 8086.

UNIT IV **Interfacing – II (with 8086 only):** Architecture and Interfacing of 8-bit ADC (0808/0809) and DAC (0800) with 8086 using PPI 8255. Interfacing of Stepper motor, 8279 (Keyboard & Display Driver) and LCD interface with 8086.

UNIT V **Architecture of 32 Bit Microprocessors**: Intel 80386Architecture, Special 80386 Registers, Memory Management, Interrupts and Exceptions, Management of Tasks–Real, Protected and Virtual 8086 mode, Architectural Differences Between 80486 and 80386 Microprocessor.

Text Books:

1. Microcomputer Systems: The 8086/8088 Family - Architecture, Programming, and Design; Y. Liu and G. A. Gibson, 2nd Ed., PHI. (Unit I, II, III & IV)
2. Microprocessors& Interfacing–Douglas V Hall, The McGraw-Hill Companies. (Unit I, II & V)

Reference Books:

1. The 8086 Microprocessor: Programming &Interfacing the PC, Kenneth J. Ayala, Penram International Publishing (India).
2. The Intel Microprocessor 8086/8088, 80186/80188, 80286, 80386, 80486, Pentium & Pentium Pro Processor: Architecture, Programming & Interfacing –Barry B Brey, Pearson Education.
3. Advanced Microprocessors and Peripherals, K M Bhurchandi and A K Ray, 3rd Edition, McGraw-Hill.
4. Advanced Microprocessor, Rajasree, New Age International Publishers.

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Branch:	**Electronics & Telecommunication**	Semester:	**V**
Subject:	**Automatic Control System**	Code:	**328556 (28)**
Total Theory Periods:	**40**	Total Tutorial Periods:	**10**
No. of class Tests to be conducted:	**2 (Minimum)**	No. of assignments to be submitted:	**2 (Minimum)**
ESE Duration:	**Three Hours**	Maximum Marks in ESE: **80**	Minimum Marks in ESE: **28**

Course Objectives:

1. To study the applicationof automatic linear control system.
2. To study the time response analysis of control system.
3. To study the frequency response analysis of control system.

Course outcome:

1. Student is able to do the mathematical modeling of control system.
2. Student is able to analyse the performance of control system.
3. Student is able to improve the performance of control system.

UNIT –I **Mathematical Models of Physical Systems:** Introduction, Differential Equation of Physical systems(Mechanical and Electrical Systems), Transfer functions, Block Diagram Algebra, Signal Flow Graphs.

UNIT-II **Feedback Characteristics of Control Systems:** Feedback & Non feedback systems, Reduction of parameter variation by use of feedback, Control over system dynamics by use of feedback, Control of the effects of disturbance signals by use of feedback, Regenerative feedback**.**

Time Response Analysis: Standard Test signals, Time response of first and second order system, steady state error and error constants, Effect of adding a zero to a system. Design specifications of second order systems, Response with P, PI, PD and PID Controllers.

UNIT-III **Stability Analysis & The Root Locus Technique:**The concept of Stability, Routh- Hurwitz stability criterion , Relative stability analysis, Introduction to The Root locus concept, Construction for Root loci, Root contours, System with Transportation Lag.

UNIT-IV **Frequency Response Analysis:** Introduction, Correlation between Time and Frequency Response, Polar Plots, Bode Plots, All-Pass and Minimum-phase Systems.

Stability in Frequency Domain: Nyquist stability criteria, Assessment of relative stability using Nyquist Criterion.

UNIT-V **State Variable Analysis and Design:**Concepts of state, state variables and state model, State models for linear continuous time systems, Diagonalization, Solution of state equations, Concepts of controllability and observability, Pole placement by state feedback.

Name of Text Books:

1.Control System Engineering, L.Nagrath and Gopal, New Age International Publications
2.Automatic Control System, B.C.Kuo,PHI

Name ofReference Books:

1.Modern Control Engineering, Ogata, Pearson Education
2.Modern Control Engineering ,Roy Choudhury,PHI
3.Introduction to Control Engineering, Ajit K. Mandal, New Age International Publications.
4. Control Systems, A. Anand Kumar, PHI

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Branch:	**Electronics &Telecommunication Engineering**	Semester:	**V**
Subject:	**Linear Integrated Circuits & Application Laboratory**	Code:	**328561 (28)**
Total Lab Periods:	**36**	Batch Size:	**30**
Maximum Marks:	**40**	Minimum Marks:	**20**

List of Experiments: *(At least Ten experiments are to be performed by each student)*

1. To design an inverting amplifier using OPAMP (741) and study its frequency response.
2. To design a non-inverting amplifier using OPAMP (741) and study its frequency response.
3. To design a summing amplifier using op-amp (741).
4. To design a differential amplifier using op-amp (741) and find its CMRR.
5. To determine SVRR and slew rate of an op-amp (741).
6. To measure the input impedance of an voltage follower using op-amp (741)
7. To measure input offset voltage, input bias current and input offset current for op-amp 741.
8. To design and study comparator circuit using op-amp (741).
9. To design a DAC using Weighted Resistor method.
10. To design a ADC using parallel comparator method.
11. To study the voltage regulation of 78XX and 79XX series of voltage regulators.
12. To design the voltage regulator using IC 723.
13. To design a Sample & Hold circuit and to study its output response.
14. To design a multiplier circuit using variable Trans-conductance method.
15. To design one quadrant divider using RC – 4200.
16. To design a square rooting circuit using multiplier.

List of Equipments/Machine Required:

Discrete components, Power Supply, Function Generator, CRO

Recommended Books:

Laboratory Manual for Operational Amplifiers and Linear ICs, David Bell, PHI

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Branch:	**Electronics &Telecommunication Engineering**	Semester:	**V**
Subject:	**Data Structures & Programming with C++ Laboratory**	Code:	**328562 (28)**
Total Lab Periods:	**36**	Batch Size:	**30**
Maximum Marks:	**40**	Minimum Marks:	**20**

List of Experiments: *(At least Ten experiments are to be performed by each student)*

1. A book shop maintains the inventory of books that one being sold at the shop. He list includes details such as authors, title, price, publisher and stock position. Whenever a customer wants a book, the sales person input the title and author and the system searches the list and displays whether it is available or not. If it is not, an appropriate message is displayed. If it is then the system displays the book details and requests for the number of copies required.
2. Write a program which will show the order of execution of constructor, destructor, static data member, static function and member functions.
3. Create class Distance having private data feet(type integer), inches(type float) and function getdist() and showdist() . Overload + operator to add two distance values and > operator to compare them.
4. Create a class called employee containing protected data name(20 characters), employee number(long integer). Also write its constructor and destructor functions. Create two derived classes called hourly _employee containing private data rate and hours and salary_ employee containing basic salary and allowances as data members. The class employee is inherited as public by these derived classes. Write appropriate functions in each class to calculate total salary of each employee and to display name, number and total salary.
5. Create a class dimension containing three float type data and a constructor to accept values, also declare a pure virtual function area() in it. Now create three derived classes rectangle, square and triangle, each inheriting dimension as public. Define corresponding constructors and redefine virtual function area() in each to give area of respective figure. A main() program should create suitable objects to implement this inheritance.
6. Create a class STRING that contains a character array as a data member. Overload + and = operators respectively to concatenate and compare strings.
7. Create two classes DM and DB respectively represent the distance in meters, centimeters and distance in feet, inches. Write a program that can read values for the class objects and add one object DM with another object of DB. Use a friend function to carry out the addition operation. The object that stores the results may be a DM object or DB object depending on the units in which the results are required. The display should be in the format of feet and inches or meters and centimeters depending on the object on display.
8. Write a program to read the contents of a text file and count the number of words present in the file.
9. Write a program that reads a text file and creates another file that is identical except that every sequence of consecutive blank spaces is replaced by single space.
10. Write a program that will ask the users to enter the details of 5 students and transfer those details into a binary file Stud.dat. Write another file that will read the details of the students and print the names of all those students who have total marks greater that a particular given value.
11. Write a program that will take the details of 10 employees as input and transfer those details into a binary file. Write another program that will provide a menu to the user for the following purpose.
    a. To sort the file on the basis of their employment number.
    b. To sort the file on the basis of their name.
    c. To search the record for a particular employee on the basis of their employee number or name.
12. Write a program that will take two strings from the command line as argument and print the appropriate message if both the strings are same.
13. Write a program to implement a stack and it's operations.
14. Write a program to implement a linear queue, circular queue using an array.
15. Write a program to convert an infix expression into its equivalent postfix expression using a stack.
16. Write a program to evaluate a postfix expression using a stack.
17. Write a program to create and display a linked list of integers.
18. Write a program to create a linked list and define functions to add a node (at the beginning, end and middle), delete a node, search a node and display all the nodes.
19. Write a program to create two linked list and append one list at the end of another using function.

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Branch:	**Electronics &Telecommunication Engineering**	Semester:	**V**
Subject:	**Digital Communication Laboratory**	Code:	**328563 (28)**
Total Lab Periods:	**36**	Batch Size:	**30**
Maximum Marks:	**40**	Minimum Marks:	**20**

List of Experiments: *(At least Ten experiments are to be performed by each student)*

1. To study Signal sampling and reconstruction techniques.
2. To study the effect on reconstructed waveform of the use of sample / hold circuit.
3. To study the TDM Pulse Amplitude Modulation / Demodulation & to draw their waveforms.
4. To study Time Division Multiplexing of Pulse Code Modulation /Demodulation
5. To study A-Law and μ-Law Companding.
6. To perform experiment with delta modulation techniques and to study the waveforms.
7. To perform experiment with adaptive delta modulation techniques and to study the waveforms.
8. To study the Equalizers Circuits.
9. To study ASK Modulation.
10. To study FSK Modulation.
11. To study PSK Modulation.
12. To study ASK Demodulation.
13. To study FSK Demodulation.
14. To study PSK Demodulation.
15. To study DPSK generation and detection.
16. To study QPSK generation and detection.
17. To study the effect of Noise in digital modulation techniques.

List of Equipments/Machine Required:
Communication Trainer Kits, Function Generator, Power Supply, CRO, Discrete Components.

Experiments can be implemented in hardware circuits or Simulated using C, C++, Simulation Software.

Recommended Books:
1. Principles of Communication Systems –Taub and Shilling, Tata McGraw Hill.
2. Handbook of Experiments in Electronics and Communication Engineering, Rao, Vikas Publishing House Pvt. Ltd.

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Branch:	**Electronics &Telecommunication Engineering**	Semester:	**V**
Subject:	**Advanced Microprocessor & Interfacing Laboratory**	Code:	**328564 (28)**
Total Lab Periods:	**36**	Batch Size:	**30**
Maximum Marks:	**40**	Minimum Marks:	**20**

List of Experiments: *(At least Ten experiments are to be performed by each student)*

1. To write a program to perform subtraction X-Y where X and Y are 48 bit numbers.
2. To write a program to multiply 4 and 5 in ASCII and store the result.
3. To find the largest number from a block of 15 bytes
4. To find the smallest number from a block of 15 bytes
5. To write a program to add series of 20 bytes.
6. A block of 200-signed bytes is present in memory from address BA: EA add all the positive bytes and store 8 bit signed result in memory after this block.
7. To write a program to compare two data blocks.
8. To write a program to scan for a specific word in the block and to store the location of the word at a suitable memory location.
9. To write an assembly language program to solve following arithmetic equation: 3AX+5DX+BP.
10. To write a program to arrange a data block in ascending/descending order.
11. To write a program to arrange a data block in descending order.
12. To write a program to insert a specific data byte in an array under certain given conditions.
13. To write program to input a 4 bit BCD number, look up the seven segment code for this number and output to the display.
14. Interface 8279 and Write a program to display a message.
15. Interface 8254 with 8086 and write a program to generate a given delay.
16. Interface 8255 with 8086 and write a program to input a given set of data through Port A and output the complement of the set of data through Port B.
17. Study the Traffic Light Interface.
18. Interface a stepper motor with 8086 and write a program to rotate the motor in a given step in a given direction.
19. Interface 8251 with 8086 and write a program to generate a train of Sync pulses of given duration.

List of Equipments/Machine Required:

8086 Microprocessor kit, Keyboard, Assembler, PCs.

Recommended Books:

The Intel 8086/8088 Microprocessor Architecture, Programming, Design and Interfacing – Bhupinder Singh Chhabra, Dhanpat Rai Publications.

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of Program:	**Bachelor of Engineering**		
Branch:	**Common to All Branches**	Semester:	**V**
Subject:	**Personality Development**	Code:	**300565 (28)**
No. of Lectures:	**2/Week**	Tutorial Period:	**NIL**
Total Marks in ESE:	**NIL**	Marks in TA:	**20**

Minimum number of Class Tests to be conducted: **Two**

Objective: The course is introduced to develop one's outer and inner personality tremendously and enrich the abilities to enable one to meet the challenges associated with different job levels. Personality Development is essential for overall development of an individual apart from gaining technical knowledge in the subject.

Course Objectives

Upon completion of this course, the student shall be able

- To understand the concept of personality and image;
- To develop leadership, listening and interacting skills;
- To develop attitudinal changes;
- To develop decision-making qualities; and
- To communication skill.

UNIT I **Personality concepts:** What is Personality – its physical and psychic aspects. How to develop a positive self-image. How to aim at Excellence. How to apply the cosmic laws that govern life and personality. How to improve Memory – How to develop successful learning skills. How to develop and effectively use one's creative power. How to apply the individual MOTIVATORS that make you a self-power personality.

UNIT II **Interpersonal Skills:** Leadership: Leaders who make a difference, Leadership: your idea, What do we know about leadership? If you are serious about Excellence. Concepts of leadership, Two important keys to effective leadership, Principles of leadership, Factors of leadership, Attributes. Listening: Listening skills, How to listen, Saying a lot- just by listening, The words and the music, How to talk to a disturbed person, Listening and sometimes challenging. How to win friends and influence people, How to get along with others. How to develop art of convincing others. How can one make the difference. How to deal with others particularly elders. Conflicts and cooperation.

UNIT III **Attitudinal Changes: Meaning of attitude,** benefits of positive attitudes, How to develop the habit of positive thinking.

Negative attitude and wining: What is FEAR and how to win it. How to win loneliness. How to win over FAILURE. How to win over PAIN. How to win over one's ANGER and others anger. What is stress and how to cope up with it? The art of self-motivation. How to acquire mental well-being. How to acquire physical well-being.

UNIT IV **Decision Making:** How to make your own LUCK. How to plan goals/objectives and action plan to achieve them. How to make RIGHT DECISION and overcome problems. How to make a Decision. Decision making: A question of style. Which style, when? People decisions: The key decisions. What do we know about group decision making? General aids towards improving group decision making.

UNIT V **Communication Skills: Public Speaking:** Importance of Public speaking for professionals. The art of Speaking - Forget the fear of presentation, Symptoms of stage fear, Main reason for speech failure, Stop failures by acquiring Information; Preparation & designing of speech, Skills to impress in public speaking & Conversation, Use of presentation aids & media.

Study & Examination: How to tackle examination, How to develop successful study skills.

Group discussions: Purpose of GD, What factors contribute to group worthiness, Roles to be played in GD.

Course Outcomes:

- The students will be able to develop inner and outer personality exposure;
- The students will be able to develop effective leadership qualities and interacting skills;
- The students will be able to develop positive attitude, motivating skills and develop winning philosophies;
- The students will be able to develop decision-making tools; and
- The students will be able to develop group presentation, public speaking and impressive conversation.

Text Books:

1. Basic Managerial Skills for all by E. H. McGrawth, prentice Hall India Pvt. Ltd., 2006
2. Basic Employability Skills by P. B. Deshmukh, BSP Books Pvt. Ltd., Hyderabad, 2014

Reference Books:

1. How to Develop a Pleasing Personality by Atul John Rego, Better Yourself Books, Mumbai, 2000
2. How to Succeed by Brain Adams, Better Yourself Books, Mumbai, 1969
3. Personality: Classic Theories & Modern Research; Friedman ; Pearson Education, 2006
4. How to Win Friends and Influence People by Dale Carnigie, A. H. Wheeler 2006