



Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore  
Program Name: Bachelor of Technology

SUBJECT CODE	Category	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		Th	T	P	CREDITS
			END SEM	MST	Q/A	END SEM	Q/A				
BTMA201	BS	Applied Mathematics II	60	20	20	-	-	3	1	-	4

### Course Objective

*To introduce the students with the Fundamentals of the Calculus of Matrices, Differential Equations and Numerical Analysis*

### Course Outcomes

*After the successful completion of this course students will be able to*

- 1. Understand and apply the basics of the calculus of matrices.*
- 2. Solve the fundamental problems of the ordinary differential equations.*
- 3. Apply the advanced techniques to solve of the ordinary differential equations.*
- 4. Know and apply the techniques of the numerical analysis for the solution of the ODE and PDE.*

### Course Content:

#### UNIT – I

##### Calculus of Matrices

Systems of linear equations and their solutions. Matrices, determinants, rank and inverse. Linear transformations. Range space and rank, null space and nullity. Eigenvalues and eigenvectors. Similarity transformations. Diagonalization of Hermitian matrices. Bilinear and quadratic forms.

#### UNIT – II

##### Differential Equation

Ordinary Differential Equations: First order linear and nonlinear ordinary differential equations, exactness and integrating factors. Ordinary linear differential equations of n-th order, solutions of homogeneous and non-homogeneous equations. Operator method. Method of undetermined coefficients and variation of parameters.

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**UNIT – III**

**Differential Equation**

Power series methods for solutions of ordinary differential equations. Legendre equation and Legendre polynomials, Bessel equation and Bessel functions of first and second kind.

**UNIT – IV**

**Numerical Analysis**

**Interpolation and Curve Fitting:** Introduction to Interpolation; Calculus of Finite Differences; Finite Difference and Divided Difference Tables; Newton-Gregory Polynomial Form; Lagrange Polynomial Interpolation; Theoretical Errors in Interpolation; Spline Interpolation; Approximation by Least Square Method. **Numerical Differentiation and Integration:** Discrete Approximation of Derivatives: Forward, Backward and Central Finite Difference Forms, Numerical Integration, Simple Newton-Cotes Rules: Trapezoidal and Simpson's (1/3) Rules; Weddle's Rule

**UNIT – V**

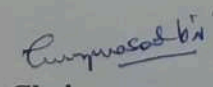
**Numerical Solution of ODE & PDE:** Euler's Method for Numerical Solution of ODE; Modified Euler's Method; Runge-Kutta Method (RK2, RK4), Error estimate; Multistep Methods: Predictor-Corrector method, finite difference methods, numerical solutions of elliptic, parabolic, and hyperbolic partial differential equations.

**Texts:**


- G. Strang, Linear Algebra And Its Applications, 4th Edition, Brooks/Cole, 2006
- S. L. Ross, Differential Equations, 3rd Edition, Wiley, 1984.
- E. A. Coddington, An Introduction to Ordinary Differential Equations, Prentice Hall, 1995.
- W.E. Boyce and R.C. DiPrima, Elementary Differential Equations and Boundary Value Problems, 7th Edition, Wiley, 2001.
- K. E. Atkinson, Numerical Analysis, John Wiley, Low Price Edition (2004).
- S. D. Conte and C. de Boor, Elementary Numerical Analysis - An Algorithmic Approach, McGraw-Hill, 2005.

  
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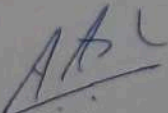
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			END SEM	MST	Q/A	END SEM	Q/A				
BTMA201	BS	Applied Mathematics II	60	20	20	-	-	3	1	-	4


- B. S. Grewal, Higher Engineering Mathematics, Khanna Publishers, Delhi

**References:**

- E. Kreyszig, Advanced Engineering Mathematics, 9th Edition, Wiley, 2005.
- R. G. Bartle and D. R. Sherbert, Introduction to Real Analysis, 5th Ed, Wiley, 1999.
- J. Stewart, Calculus: Early Transcendentals, 5th Ed, Thomas Learning (Brooks/ Cole), Indian Reprint, 2003.
- J. Stoer and R. Bulirsch, Introduction to Numerical Analysis, 2nd Edition, Texts in Applied Mathematics, Vol. 12, Springer Verlag, 2002
- M.K Jain, S.R.K Iyengar and R.K Jain, Numerical methods for scientific and engineering computation (Fourth Edition), New Age International (P) Limited, New Delhi, 2004.
- S. C. Chapra, Applied Numerical Methods with MATLAB for Engineers and Scientists, McGraw-Hill 2008.
- J.D.Hoffman, Numerical Methods for Engineers and Scientists, McGraw-Hill, 2001.

  
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# Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

## Shri Vaishnav Institute of Science

Name of Program: B.Tech. (All streams)

(2021-2025)

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTCH101	BEC	Applied Chemistry	60	20	20	30	20	3	1	2	5

**Legends:** L - Lecture; T - Tutorial/Teacher Guided Student Activity; P - Practical; C - Credit.

\***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

### Unit-V

#### (A) LUBRICANTS

Mechanism of lubrication, Classification of lubricants, Properties & testing of lubricating oil. Definition of viscosity of a liquid; Determination of Viscosity; Shear Viscosity; Intrinsic Viscosity; Molecular weight from Viscosity measurement & Numerical problems based on viscosity index.

#### (B) ENGINEERING MATERIALS

Cement and Refractories.

### References

1. Engg. Chemistry- Rath cengage learning.
2. Chemistry for Environmental Engineering – Sawyer, McCarty and Parkin McGraw Hill, International.
3. Basic Lubrication theory – Alistair Cameron
4. Engineering chemistry- Dr. Jyoti Mitna
5. Engineering chemistry- Dr. Sunita Ratan
6. Applied Chemistry – S.M. Khopkar
7. Polymer Science- V.R. Gowawriker
8. Introduction of polymer science – G.S. Mishra.


### List of Experiments


**Exp. 01.** To estimate the strength of the given unknown solution of Mohr's salt (Ferrous ammonium sulphate ( $\text{FeSO}_4(\text{NH}_4)_2\text{SO}_4 \cdot 6\text{H}_2\text{O}$ ) using  $\text{KMnO}_4$  solution as an intermediate.


**Exp.02** Estimation of hardness by EDTA method.

**Exp.03.** Conductometric titration - determination of strength of an acid.

**Exp.04.** Estimation of iron by potentiometry.

  
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# Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

## Shri Vaishnav Institute of Science

Name of Program: B.Tech. (All streams)

(2021-2025)

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTCH101	BEC	Applied Chemistry	60	20	20	30	20	3	1	2	5

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### Course Educational Objectives (CEOs):

The subject aims to provide the student with:

1. To bring adaptability to new developments in Engineering Chemistry to acquire the skills required to become a perfect engineer.
2. To include the importance of water analysis and treatment in industrial usage, significance of corrosion control to protect the structures, structure, and applications of electrochemical cells.
3. To acquire required knowledge about engineering materials like cement, refractories, and lubricants and to understand the instrumentation techniques used in industries.
4. To acquaint the students with practical knowledge of the basic concepts of chemistry.

### Course Outcomes (COs):


1. Students will gain the basic knowledge of chemical procedures related to polymerization, redox reactions and corrosion and its control.
2. They learn the use of fundamental principles to make predictions about the general properties of materials like lubricants, cement and refractories and the instrumentation techniques used in industries.
3. They can understand the basic properties of water and its treatment to overcome the boiler related problems in industries and power plants.
4. They can predict potential applications of chemistry and practical utility to become good engineers and entrepreneurs.


### Syllabus


#### Unit-I

#### POLYMERS AND REINFORCED PLASTICS

Classification of polymers - types of polymerization reactions - mechanism of addition polymerization: free radical, ionic and Ziegler - Natta - effect of structure on the properties of polymers - strength, plastic deformation, elasticity, and crystallinity -Preparation and properties of important resins: Polyethylene, PVC, PMMA, Polyester, Teflon, Bakelite and Epoxy resins - compounding of plastics - moulding methods - injection, extrusion, compression.

  
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# Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

## Shri Vaishnav Institute of Science

Name of Program: B.Tech. (All streams)

(2021-2025)

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
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BTCH101	BEC	Applied Chemistry	60	20	20	30	20	3	1	2	5

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### Unit-II

#### (A) ELECTROCHEMISTRY

Arrhenius theory of electrolytic dissociation, Transport number, Kohlrausch's law, Solubility product, Redox reaction, Electrochemical and concentration cells and their applications, Ion selective electrodes.

#### (B) CORROSION AND ITS CONTROL

Corrosion: Basic concepts - mechanism of chemical, electrochemical corrosion - Pilling Bedworth rule - Types of Electrochemical corrosion - galvanic corrosion - differential aeration corrosion - pitting corrosion - stress corrosion - Measurement of corrosion (wt. loss method only) - factors influencing corrosion. Corrosion control: Cathodic protection - sacrificial anodic method - corrosion inhibitors. Protective coatings: surface preparation for metallic coatings - electro plating (copper plating) and electroless plating (Nickel plating) - chemical conversion coatings - anodizing, phosphating & chromate coating.

### Unit-III


#### BASIC INSTRUMENTAL TECHNIQUES


Basic principles, instrumentation, and applications of UV - visible spectroscopy, Infrared spectroscopy, and flame photometry. General introduction of Chromatography.


### Unit-IV

#### WATER ANALYSIS AND TREATMENT

Water quality parameters: Physical, Chemical & Biological significance - Hardness of water - estimation of hardness (EDTA method) - Dissolved oxygen - determination (Winkler's method), Alkalinity - determination - disadvantages of using hard water in boilers: Scale, sludge formation - disadvantages - prevention - treatment: Internal conditioning - phosphate, carbon and carbonate conditioning methods - External: Zeolite, ion exchange, Lime Soda methods & Numericals-desalination - reverse osmosis and electrodialysis - domestic water treatment.

  
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# Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

## Shri Vaishnav Institute of Science

Name of Program: B.Tech. (All streams)

(2021-2025)

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME								
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### Unit-V

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Mechanism of lubrication, Classification of lubricants, Properties & testing of lubricating oil. Definition of viscosity of a liquid; Determination of Viscosity; Shear Viscosity; Intrinsic Viscosity; Molecular weight from Viscosity measurement & Numerical problems based on viscosity index.

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Cement and Refractories.

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# Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

## Shri Vaishnav Institute of Science

Name of Program: B.Tech. (All streams)

(2021-2025)

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME								
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**Exp.05.** Determination of molecular weight of polymer by viscosity average method.

**Exp.06.** Determination of Na / K in water sample by Flame photometry (Demonstration).


**Exp.07.** Determination of total alkalinity and acidity of a water sample.


**Exp.08** Estimation of calcium ions present in tap water. (TDS).


**Exp.09** To determine the viscosity of a given liquid (30% sugar solution) at room temperature using Ostwald's viscometer.

**Exp.10** Testing of Flash point of lubricating oil by Pensky Martins apparatus.

**Exp.11** To determine the viscosity index by Red wood Viscometer 1 & 2.

  
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**Shri Vaishnav Institute of Technology and Science**  
**Choice Based Credit System (CBCS) Scheme in light of NEP-2020**  
**B. Tech/B.Tech+MBA in Mechanical Engineering**  
**(2021-2025)**

COURSE CODE	CATEG ORY	COURSE NAME	TEACHING &EVALUATION SCHEME								
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BTME101	BEC	ENGINEERING DRAWING	60	20	20	30	20	2	0	4	4

**Legends:** L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit;

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**Course Educational Objectives (CEOs):**

To familiarize with concepts of (A) scale, conic sections and engineering curves (B) projections of points and line in all quadrants; (C) construction of geometrical figures & solids, with its orientation on horizontal and vertical planes, and its projection; section of solid, (D) development of solid and isometric projection view.

**Course Outcomes:**

After completion of this course the students are expected to be able to demonstrate following knowledge, skills and attitudes:

1. Student would be able to draw scale, conic sections and engineering curves.
2. Student would be able to draw projection of point and line; identify the use of these concepts in practical life.
3. Students would be able to understand plain & 3D model at various orientations and draw their projection.
4. Student would be able to draw the projections of with and without sectioning of solid models and surface development.
5. Students would be able to understand the difference between orthographic view and isometric projections.

**Syllabus:**

**UNIT I**

**(8 Hrs)**

**Scales, Conic Section & Engineering Curves Scales:** Representative Factor, types of scales, principle and construction of different scales

**Conic Section:** Construction of ellipse, parabola and hyperbola by different methods; Normal and Tangent

**Engineering Curves:** Cycloid, Epicycloids, Hyper cycloid, Involute, Archimedean and Logarithmic spirals

**UNIT II**

**(9 Hrs)**

**Projection of Points & Line Projection:** Introduction to projection, Types of projection, terminology, first angle and third angle

**Projection of Points:** Introduction of point, conventional representation

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**Projection of Lines:** Introduction of straight line, orientation of straight line, true inclination and true length, concepts of end projectors, plan and traces and auxiliary planes.

**UNIT III** **(9 Hrs)**

**Projections of Planes:** Introduction of planes, types of planes, orientation of planes, projection of planes in different positions, traces of planes

**Projection of Solids:** Introduction of solids, classification of solids, recommended naming of corners of solids, orientation of solids

**UNIT IV** **(8 Hrs)**

**Section of Solids:** Introduction of section of solids, terminology, types of section planes, section of prisms, section of pyramid and section of composite solids

**Development of Surfaces:** Introduction of development of surfaces, classification of surfaces, methods of development, development of prisms; pyramids, cylinder and cone, anti-development

**UNIT V** **(7 Hrs)**

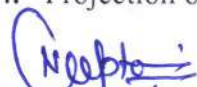
**Isometric Projections:** Introduction of isometric projection, terminology, isometric projections and isometric views, isometric views of planes, right solids, truncated solids and composite solids.

**Text and Reference Books:**

1. "Engineering Graphics" by P.I. Varghese, McGraw Hill Edu., 2012.
2. "Engineering Drawing and graphics" by K. Venugopal, New Age (I) Pub., 2004.
3. "Engineering Drawing" by N.D. Bhatt, Charotar Publishing House, 2014.
4. "Engineering Drawing" by Basant Agarwal & C.M. Agarwal, McGraw Hill Edu., 2013.
5. "Engineering Drawing" by P.S. Gill, S.K. Kataria & Sons, 2013.

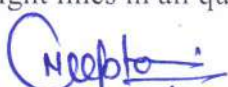
**List of Experiments:**

1. Drawing various types of scales using representative fraction.
2. Drawing various conics section.
3. Projection of points in all quadrants.
4. Projection of straight lines in all quadrants in various orientations.



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**B. Tech/B.Tech+MBA in Mechanical Engineering**  
**(2021-2025)**

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BTME101	BEC	ENGINEERING DRAWING	60	20	20	30	20	2	0	4	4

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5. Projection of geometrical planes with various orientations.
6. Projection of solid models with various orientations.
7. Projection of section of solids by using various types of cutting planes.
8. Drawing development of surface using various methods of prisms, pyramids, cone, cylinder, etc.
9. Drawing anti- development of surfaces.
10. Drawing isometric projections using various methods and isometric views.

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**Shri Vaishnav Institute of Technology and Science**  
**Choice Based Credit System (CBCS) in the Light of NEP-2020**  
**B.Tech. in Electronics and Communication**  
**(2021-2025)**

COURSE CODE	CATE- GORY	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTEC402	DCC	Digital Electronics	60	20	20	30	20	2	1	2	4

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**Course Educational Objectives (CEOs):**

The objective of this course is to-

1. Use of Boolean algebra and Karnaugh Map to simplify logic function.
2. Describe the operation of different Combinational and Sequential Logic Circuits.

**Course Outcomes (COs):**

After completion of this course the students will be able to-

1. Design an optimal digital logic circuit to meet the given specifications.
2. Evaluate the performance of the given digital logic circuit based on specific criteria for reliable system implementation.

**Syllabus**

**UNIT I**

**9 Hrs.**

**Logic Function Optimization and Arithmetic Circuits**

Logic Function, Sum of Product and Product of Sum form, Karnaugh Map minimization, Incompletely specified functions. Arithmetic Circuits- Half Adder, Full Adder, Half Subtractor, Full Subtractor, Parallel Adders/Subtractors- Ripple Carry Adder, Carry Look Ahead Adder, Serial Adders /Subtractors.

**UNIT II**

**9 Hrs.**

**Combinational Circuits**

Multiplexers, Demultiplexers, Encoders- Binary Encoders, Priority Encoders, Decoders, Synthesis of logic functions using Multiplexers and Decoders. Structural modeling of higher order circuits using lower order circuits, Code converters.

**UNIT III**

**9 Hrs.**

**Sequential Design Elements**

S-R Latch, D- Latch, Flip Flops- Master Slave and Edge Triggered, S-R, D, J-K, T , State Table, State Equation, Timing Diagram, Excitation Table, Flip Flop Conversions, Setup and Hold Time. 555 Timer chip and its application in multivibrators.

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**(2021-2025)**

COURSE CODE	CATE-GORY	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTEC402	DCC	Digital Electronics	60	20	20	30	20	2	1	2	4

**Legends:** L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit;

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#### UNIT IV

##### Sequential Circuits

**8 Hrs.**

Registers, Shift Registers, Counters- Synchronous and Asynchronous counters, Design Examples, Synchronous Sequential Circuits, State Machines, Mealy and Moore Model, State Diagram, State Table, State Assignment, State Minimization, Design Examples.

#### UNIT V

##### Logic Families

**8 Hrs.**

Characteristics of Digital ICs- Voltage Levels, Speed, Power, Noise Margin, Fan In, Fan Out. Logic Families- TTL, MOS- NMOS, PMOS, CMOS, ECL, IIL.

#### Text Books:

1. M. Morris Mano, “Digital Logic Design”, Fifth Edition, Pearson Education, 2015
2. Salivahanan and Ari Vahagan, “Digital Circuits and Design”, Fifth Edition, Vikas Publishing House, 2018

#### References:

1. Anand Kumar, “Fundamentals of Digital Circuits”, Third Edition, PHI, 2014.
2. Floyd and Jain, “Digital Fundamentals”, Eighth Edition, Pearson Education, 2005.
3. Roland J. Tocci, Widmer, Moss, “Digital Systems Principles and Applications”, , Eleventh Edition, Pearson Education, 2010.
4. Stephen Brown I Zvanko Vranesic “Fundamentals of Digital Logic Design”, Second Edition, The Mc Graw Hill, 2006

#### List of Experiments:

1. Implementation of Adders and Subtractors.
2. Realization of multiplexers and demultiplexers.
3. Synthesis of logic function using multiplexer.
4. Design and analysis of Encoder and Decoders.
5. Analysis of various flip flops with Preset and Clear capability.

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6. Design of Astable, Monostable and Bistable multivibrator using 555 Timer.
7. Design of various Shift registers.
8. Design of Johnson and Ring counter.
9. Design of synchronous and asynchronous up/down counters.
10. Design of logic functions using PLDs.
11. Design of some minor projects based on digital circuits to solve real life problems.

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BTEC102		Fundamentals of Electronics Engineering	60	20	20	30	20	3	0	2	4

**Legends:** L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit;

\***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

**Course Educational Objectives (CEOs):**

The subject aims to provide the student with:

1. An understanding of basic Electronics Engg. abstractions on which analysis and design of electronic circuits and systems are based.
2. To familiarize the working and characteristics of diodes, transistors, MOSFETS and some measuring instruments.

**Course Outcomes (COs):**

Students will:

1. Learn how to develop and employ circuit models for elementary electronic components, e.g., resistors, sources, inductors, capacitors, diodes and transistors.
2. Be able to utilize various methods of circuit analysis, including simplified methods such as series-parallel reductions, voltage and current dividers, etc.
3. Be able to understand the primitives of Boolean algebra, used to describe the processing of binary circuits.

**Syllabus**

**UNIT I**

**8 Hrs.**

**Introduction:** Evolution and Impact of Electronics in industries and in society, Familiarization with Resistors, Capacitors, Inductors, Transformers and Electro-mechanical components, PN Junction diode: Structure, Principle of operation, various types of Diode, Solar cell.

**UNIT II**

**9 Hrs.**

**Rectifiers and Transistors:** Half wave and full wave rectifiers, capacitive filter, Zener voltage regulator. Bipolar Junction Transistors: Structure, Principle of operation, and its CB, CC, CE configuration.

**UNIT III**

**8 Hrs.**

**Basic Electrical Parameter Measuring Instruments:** Voltmeters & Ammeter, Wattmeter, Energy meter, Basics of CRO (analog & digital).

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BTEC102		Fundamentals of Electronics Engineering	60	20	20	30	20	3	0	2	4

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#### UNIT IV

**8 Hrs.**

**Number System:** Introduction to binary, octal, decimal & hexadecimal systems, representation of negative numbers, 1's, 2's, 9's, 10's complement and their arithmetic. Introduction, Definitions, Principle of Duality, Basic Theorems, Applications of Boolean Algebra, Boolean Functions, Complement of Boolean Function. Logic Gates (Symbol, Truth Table, Logic Diagram): And, OR, NOT, NAND, NOR, XOR, XNOR. Universal Gates: NAND Gate and NOR Gate implementation.

#### UNIT V

**9 Hrs.**

**Signals:** Introduction, Representation of Discrete-time Signals: Graphical Representation, Functional Representation, Tabular Representation, and Sequence Representation. Elementary Signals: Unit Step Function, Unit Ramp Function, Unit Parabolic Function, Unit Impulse Function, Sinusoidal Signal, Real Exponential Signal, Complex Exponential Signal, Rectangular Pulse Function, Triangular Pulse Function and their energy and power calculation.

#### Text Books:

1. Boylested, R. L. and Nashelsky, L., "Electronic Devices and Circuit Theory", 11<sup>th</sup> edition, Pearson Education, 2013.
2. Bell, D. A., "Electronic Devices and Circuits", 5th edition, Oxford University Press, 2008.
3. M. Morris Mano and Michael D. Ciletti, "Digital Design", 5th edition, Pearson Education, 2013
4. A Anand Kumar, "Signals and Systems", 3rd edition, PHI, 2013.

#### References:

1. Sedra and Smith, "Microelectronic Circuits", Fourth Edition, Oxford University Press, 2010.
2. Ashok Ambardar, "Analog and Digital Signal Processing", Second Edition, Brooks/Cole Publishing Company.
3. A. Anand Kumar, "Fundamentals of Digital Circuits", Fourth Edition, PHI.
4. A.K Sawhney, "A Course on Electrical and Electronics Measurement and Measuring Instruments" Dhanpat Rai pub, 2015.

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**List of Experiments.**

1. Understanding the working of Laboratory Instruments (Oscilloscope, Function Generator, Digital Multimeter, DC Power Supply)
2. Interpreting the characteristics of Passive Circuit Elements (R, L, C)
3. Interpreting the Time & Frequency Response of RC and RL Circuits.
4. Analyzing V-I curve for P-N Junction Diodes.
5. Analyzing V-I curve for Zener Diode.
6. Analyzing and demonstrating Zener as a voltage regulator
7. Analyzing Half-Wave and Full-Wave (Center tapped and Bridge) Rectifiers
8. Interpreting the characteristics of Bipolar Junction Transistor (BJT)
9. Verification of Truth Table of various logic gates.
10. Understanding basic Combinatorial Circuits using logic gate Integrated circuits.

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BTCS207	BEC	COMPUTER PROGRAMMING-II	0	0	0	30	20	0	0	2	1

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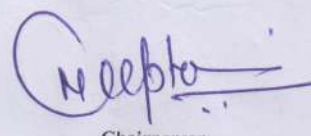
**Course Objectives:**

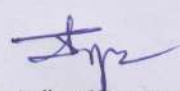
1. To understand Object oriented concepts.
2. To understand programming using object oriented techniques.
3. To understand the use of various system libraries.
4. To have the knowledge of important topics and principles of software development.
5. To write a computer program & to solve specified problems.
6. To use the Java SDK environment to create, debug and run simple Java programs.
7. To study event driven Graphical User Interface(GUI)programming


**Course Outcomes:**

1. Students should be able to explain the object oriented concepts.
2. Students should be able to write programs using object-based programming techniques including classes, objects and inheritance.
3. Able to use of various system libraries.
4. Be aware of the important topics and principles of software development.
5. Have the ability to write a computer program to solve specified problems.
6. Be able to use the JavaSDK environment to create, debug and run simple Java programs.
7. Introduce event driven Graphical User Interface(GUI) programming

  
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#### UNIT-I

**Java Fundamentals:** Features of Java, OOPS Concepts Java virtual machine, Byte code interpretation, Data types, variable, arrays, expressions, operators, and control structures, Objects, Introduction to Class Instance members and member functions, constructors, constructor overloading, Static Method, Static classes, Inner classes.

#### UNIT-II


**Introduction to Java classes and objects:** Java features: Java syntax, data types, data type conversions, control statements, operators and their precedence. Introduction to Class: Instance members and member functions. Inner Classes, String Handling, Wrapper classes

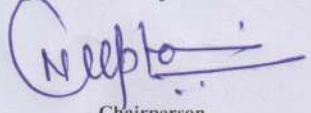
#### UNIT-III

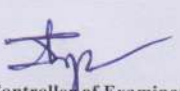
**Inheritance, Polymorphism and Collection:** Class relationships: Inheritance and its types, Merit and Demerits. Association, Association inheritance, Polymorphism: Dynamic method dispatch, Runtime polymorphism, Abstract classes, Interface and packages, Collections.

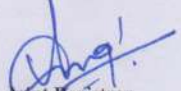
#### UNIT-IV

**Exception Handling and Multithreading:** Exceptions: Need for exceptions, Exception hierarchy: Checked/Unchecked exceptions, Try, catch, finally, Throw, throws, creating exceptions. Multithreading: Thread Lifecycle, Multithreading advantages and issues, Simple thread program, Priorities and scheduling, Thread Synchronization.

  
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BTCS207	BEC	COMPUTER PROGRAMMING-II	0	0	0	30	20	0	0	2	1

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#### UNIT-V


**Java I/O, Applets, Event Handling, and Database Connectivity:** Basic concept of streams I/O stream & reader-writer classes. File handling. Applet and its Life Cycle, Basic GUI elements, Event Delegation Model and event handling Swing components: Applet, JButton, JFrame, etc. Sample swing Programs JDBC architecture establishing connectivity and working with connection interface working with statements, Creating and executing SQL statements, working with Result Set.

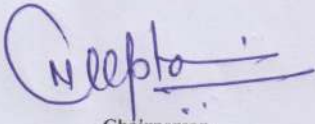
#### Text Books:

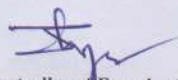
1. Java- Head First 2nd edition Kathy Sierra , Bert Bates.
2. Programming with Java A Primer, E. Balaguruswamy Tata McGraw Hill Companies.
3. Java Programming John P. Flynt Thomson 2nd.

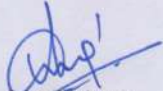
#### References:

1. Java Programming Language Ken Arnold Pearson.
2. The complete reference JAVA2, Hervertschildt. TMH.
3. Big Java, Cay Horstmann 2nd edition, Wiley India Edition.
4. Java – Balaguruswamy.

  
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BTCS207	BEC	COMPUTER PROGRAMMING-II	0	0	0	30	20	0	0	2	1

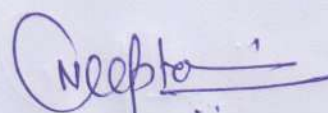
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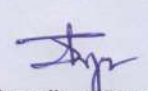
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**Practical List :**

1. Installation of J2SDK
2. Write a program to show Scope of Variables
3. Write a program to show Concept of CLASS in JAVA
4. Write a program to show Type Casting in JAVA
5. Write a program to show How Exception Handling is in JAVA
6. Write a Program to show Inheritance
7. Write a program to show Polymorphism
8. Write a program to show Access Specifiers (Public, Private, Protected) in JAVA
9. Write a program to show use and Advantages of CONSTRUCTOR.
10. Write a program to show Interfacing between two classes
11. Write a program to Add a Class to a Package
12. Write a program to show Life Cycle of a Thread
13. Write a program to demonstrate AWT.
14. Write a program to Hide a Class
15. Write a Program to show Data Base Connectivity Using JAVA
16. Write a Program to show "HELLOJAVA" in Explore using Applet
17. Write a Program to show Connectivity using JDBC
18. Write a program to demonstrate multithreading using Java.
19. Write a program to demonstrate applet lifecycle.
20. Write a program to demonstrate concept of servlet.

  
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**HUMANITIES**

Semester I / Semester II

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HUCS101	AECC	Communication Skills	60	20	20	-	20	1	0	2	2

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**Course educational Objectives (CEOs): The students will be**

- **CEO1** Provided an overview of Business Communication and an outline to effective Organizational Communication.
- **CEO2** Familiarized with the usage pattern of English language to help them to learn and identify language structures for correct English usage.
- **CEO3** Explained ways to put in use the basic mechanics of Grammar.
- **CEO4** Imparted the nuances of Business correspondence and different types of letter writing required in an official setup.
- **CEO5** Imparted the different types of Reports used in an organizational setup.


**Course Outcomes (Cos): The students will be able to**


- **CO1** Demonstrate strong conceptual knowledge of organizational communication and its different barriers and at the same time develop an understanding of verbal and non verbal communication in a business set up.
- **CO2** Demonstrate his/her ability to write error free sentences and speak in the required Communicative competence.
- **CO3** apply knowledge of spotting common errors and rectify them and develop coherence, cohesion and competence in oral and written discourse.
- **CO4** Draft effective business correspondence (letters) with brevity and clarity depending on the various prescribed formats.
- **CO5** Delineate effective business reports with brevity and clarity depending on the various prescribed Formats.


**COURSE CONTENTS:**

**UNIT I**

Communication: Nature, Meaning, Definition, Verbal and Non Verbal Communication Barriers to Communication.

  
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Semester I / Semester II

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HUCS101	AECC	Communication Skills	60	20	20	-	20	1	0	2	2

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P - Practical; C - Credit;

\*Teacher Assessment shall be based following components: Quiz/Assignment/ Project/Participation in Class. given that no component shall exceed more than 10 marks.

### UNIT II

Basic Language Skills: Grammar and usage- Parts of Speech, Tenses, S-V Agreement, Preposition, Article.

### UNIT III

Basic Language Skills: Types of Sentence, Direct - Indirect, Active - Passive voice, Phrases & Clauses.

### UNIT IV

Business Correspondence: Business Letter, Parts & Layouts of Business Resume and Job application, E-mail writing.

### UNIT V

Report Writing: Importance of Report, Types of Report, Structure of a Report.

#### Practical:

- Self Introduction
- Reading Skills and Listening Skills
- Oral Presentation
- Linguistics and Phonetics
- JAM (Just a Minute)
- Group Discussion

#### Suggested Readings

- Ashraf Rizvi.(2005). *Effective Technical Communication*. New Delhi:Tata Mc Graw Hill
- Adair, John (2003). *Effective Communication*. London: Pan Macmillan Ltd.

  
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**Shri Vaishnav Institute of Social Sciences, Humanities and Arts**  
**Choice Based Credit System (CBCS) in Light of NEP-2020**

**HUMANITIES**

Semester I / Semester II

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
HUCS101	AECC	Communication Skills	60	20	20	-	20	1	0	2	2

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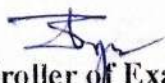
- A.J. Thomson and A.V. Martinet(1991). *A Practical English Grammar*( 4<sup>th</sup> ed). Newyork: Oxford IBH Pub.
- Kratz, Abby Robinson (1995). *Effective Listening Skills*. Toronto: ON: Irwin Professional Publishing.
- Prasad, H. M.(2001) *How to Prepare for Group Discussion and Interview*. New Delhi: Tata McGraw-Hill.
- Pease, Allan. (1998). *Body Language*. Delhi: Sudha Publications.



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