ShriVaishnavVidyapeethVishwavidyalaya, Indore

ShriVaishnav Institute of Information Technology

B.Tech in Computer Science and Business Systems TCS
Choice Based Credit System (CBCS)-2025-29
SEMESTER-I

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME					L	T	P	CREDITS
			THEORY			PRACTICAL					
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTCSBS101	BSC	Discrete Mathematics	60	20	20	0	0	3	0	0	3

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.

SYLLABUS

UNIT I

Boolean algebra: Introduction of Boolean algebra, truth table, basic logic gate, basic postulates of Boolean algebra, principle of duality, canonical form, Karnaugh map.

UNIT II

Abstract algebra: Set, relation, group, ring, field.

UNIT III

Combinatorics: Basic counting, balls and bins problems, generating functions, recurrence relations. Proof techniques, principle of mathematical induction, pigeonhole principle.

UNIT IV

Graph Theory: Graphs and digraphs, complement, isomorphism, connectedness and reachability, adjacency matrix, Eulerian paths and circuits in graphs and digraphs, Hamiltonian paths and circuits in graphs and tournaments, trees; Planar graphs, Euler's formula, dual of a planer graph, independence number and clique number, chromatic number, statement of Four-color theorem.

UNIT V

Logic: Propositional calculus - propositions and connectives, syntax; Semantics - truth assignments and truth tables, validity and satisfiability, tautology; Adequate set of connectives; Equivalence and normal forms; Compactness and resolution; Formal reducibility - natural deduction system and axiom system; Soundness and completeness.

TEXTBOOKS:

1. Topics in Algebra, I. N. Herstein, John Wiley and Sons.
2. Digital Logic & Computer Design, M. Morris Mano, Pearson.
3. Elements of Discrete Mathematics, (Second Edition) C. L. LiuMcGraw Hill, New Delhi.
4. Graph Theory with Applications, J. A. Bondy and U. S. R. Murty, Macmillan Press, London.
5. Mathematical Logic for Computer Science, L. Zhongwan, World Scientific, Singapore.

REFERENCE:

1. Introduction to linear algebra. Gilbert Strang.
2. Introductory Combinatorics, R. A. Brualdi, North-Holland, New York.

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BTCSBS101	**BSC**	**Discrete Mathematics**	60	20	20	0	0	3	0	0	3

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3.	Graph Theory with Applications to Engineering and Computer Science, N. Deo, Prentice Hall, Englewood Cliffs.
4.	Introduction to Mathematical Logic, (Second Edition), E. Mendelsohn, Van-Nostrand, London.

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BTCSBS102	BSC	Introduction to Statistics, Probability and Calculus	60	20	20	0	0	3	0	0	3

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SYLLABUS	
UNIT I	
Introduction to Statistics: Definition of Statistics. Basic objectives. Applications in various branches of science with examples. Collection of Data: Internal and external data, Primary and secondary Data. Population and sample, Representative sample.	
UNIT II	
Descriptive Statistics: Classification and tabulation of univariate data, graphical representation, Frequency curves. Descriptive measures - central tendency and dispersion. Bivariate data. Summarization, marginal and conditional frequency distribution.	
UNIT III	
Probability: Concept of experiments, sample space, event. Definition of Combinatorial Probability. Conditional Probability, Bayes Theorem. Probability distributions: discrete & continuous distributions, Binomial, Poisson and Geometric distributions, Uniform, Exponential, Normal, Chi-square, t, F distributions.	
UNIT IV	
Expected values and moments: mathematical expectation and its properties, Moments (including variance) and their properties, interpretation, Moment generating function.	
UNIT V	
Calculus: Basic concepts of Differential and integral calculus, application of double and triple integral.	

TEXTBOOKS:	
1.	Introduction of Probability Models, S. M. Ross, Academic Press, N.Y.
2.	Fundamentals of Statistics, vol. I & II, A. Goon, M. Gupta and B. Dasgupta, World Press.
3.	Higher Engineering Mathematics, B. S. Grewal, Khanna Publication, Delhi.

REFERENCE:	
1.	A first course in Probability, S. M. Ross, Prentice Hall.
2.	Probability and Statistics for Engineers, (Fourth Edition), I. R. Miller, J.E. Freund and R. Johnson, PHI.

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BTCSBS102	**BSC**	**Introduction to Statistics, Probability and Calculus**	60	20	20	0	0	3	0	0	3

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3.	Introduction to the Theory of Statistics, A. M. Mood, F.A. Graybill and D.C. Boes, McGraw Hill Education.
4.	Advanced Engineering Mathematics, (Seventh Edition), Peter V. O'Neil, Thomson Learning.
5.	Advanced Engineering Mathematics, (Second Edition) M. D. Greenberg, , Pearson Education.
6.	Applied Mathematics, Vol. I & II, P. N. Wartikar and J. N. Wartikar, Vidyarthi Prakashan.

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BTCSBS103	ESC	Fundamentals of Computer Science	60	20	20	30	20	2	1	2	4

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SYLLABUS

UNIT I

General problem Solving concepts: Algorithm, and Flowchart for problem solving with Sequential Logic Structure, Decisions and Loops.
Imperative languages: Introduction to imperative language; syntax and constructs of a specific language (ANSI C)

Types Operator and Expressions with discussion of variable naming and Hungarian Notation: Variable Names, Data Type and Sizes (Little Endian Big Endian), Constants, Declarations, Arithmetic Operators, Relational Operators, Logical Operators, Type Conversion, Increment Decrement Operators, Bitwise Operators, Assignment Operators and Expressions, Precedence and Order of Evaluation, proper variable naming and Hungarian Notation.

UNIT II

Control Flow with discussion on structured and unstructured programming: Statements and Blocks, If-Else-If, Switch, Loops – while, do, for, break and continue, goto labels, structured and un- structured programming.

UNIT III

Functions and Program Structure with discussion on standard library: Basics of functions, parameter passing and returning type, C main return as integer, External, Auto, Local, Static, Register Variables, Scope Rules, Block structure, Initialisation, Recursion, Pre-processor, Standard Library Functions and return types.

UNIT IV

Pointers and Arrays: Pointers and address, Pointers and Function Arguments, Pointers and Arrays, Address Arithmetic, character Pointers and Functions, Pointer Arrays, Pointer to Pointer, Multi-dimensional array and Row/column major formats, Initialisation of Pointer Arrays, Command line arguments, Pointer to functions, complicated declarations and how they are evaluated.

Structures: Basic Structures, Structures and Functions, Array of structures, Pointer of structures, Self-referral structures, Table look up, typedef, unions, Bit-fields

UNIT V

Input and Output: Standard I/O, Formatted Output – printf, Formated Input – scanf, Variable length argument list, file access including FILE structure, fopen, stdin, sdtout and stderr, Error Handling including exit, perror and error.h, Line I/O, related miscellaneous functions.

Unix system Interface: File Descriptor, Low level I/O – read and write, open, create, close and unlink, Random

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BTCSBS103	**ESC**	**Fundamentals of Computer Science**	60	20	20	30	20	2	1	2	4

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access – lseek, Discussions on Listing Directory, Storage allocator.

Programming Method: Debugging, Macro, User Defined Header, User Defined Library Function, makefile utility.

LABORATORY:

1.	Algorithm and flowcharts of small problems like GCD.
2.	2. Structured code writing with: i. Small but tricky codes ii. Proper parameter passing iii. Command line Arguments iv. Variable parameter v. Pointer to functions vi. User defined header vii. Make file utility viii. Multi file program and user defined libraries ix. Interesting substring matching / searching programs x. Parsing related assignments.

TEXTBOOKS:

1.	The C Programming Language, (Second Edition) B. W. Kernighan and D. M. Ritchi, PHI.
2.	Programming in C, (Second Edition) B. Gottfried, Schaum Outline Series.

REFERENCE:

1.	C: The Complete Reference, (Fourth Edition), Herbert Schildt, McGraw Hill.
2.	Let Us C, Yashavant Kanetkar, BPB Publications.

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BTCSBS104	ESC	Principles of Electrical Engineering	60	20	20	30	20	2	0	2	3

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SYLLABUS

UNIT I

Introduction: Fundamental linear passive and active elements to their functional current-voltage relation, voltage source and current sources, ideal and practical sources, Kirchhoff-s laws and applications to network solutions using mesh and nodal analysis, Concept of work, power, energy, and conversion of energy.
Basic network: Current-voltage relations of the electric network by mathematical equations to analyze the network (Thevenin's theorem, Norton's Theorem, Maximum Power Transfer theorem) Simplifications of networks using series-parallel, Star/Delta transformation. Superposition theorem.

UNIT II

Concept of AC: AC waveform definitions, form factor, peak factor, phasor representation in polar and rectangular form, concept of impedance, admittance, complex power, power factor, single phase and three phase concept.

UNIT III

Electrostatics and Electro-Mechanics: Electrostatic field, electric field strength, concept of permittivity in dielectrics, energy stored in capacitors, charging and discharging of capacitors. Electro Magnetism, magnetic field and Faraday's law. Magnetic materials and B-H curve. Self and mutual inductance, Ampere's law, Study of R-L, R-C, RLC series circuit, R-L-C parallel circuit. Electromechanical energy conversion.

UNIT IV

Measurements and Sensors: Measuring devices/sensors and transducers (Piezoelectric and thermo-couple) related to electrical signals, Elementary methods for the measurement of electrical quantities in DC and AC systems (Current & Single-phase power). Concept of indicating and integrating instruments.

UNIT V

Practical considerations: Electrical Wiring types and accessories, Illumination system, Basic layout of the distribution system, Types of earthing, Safety devices & systems. Battery principles and types.

LABORATORY:

1.	Familiarization of electrical circuits: sources, measuring devices and transducers
2.	Determination of resistance temperature coefficient
3.	Verification of Network Theorem (Superposition, Thevenin, Norton, Maximum Power Transfer theorem)
4.	Simulation of R-L-C series circuits for XL>XC , XL< XC
5.	Simulation of Time response of RC circuit

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BTCSBS104	ESC	Principles of Electrical Engineering	60	20	20	30	20	2	0	2	3

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.

6.	Demonstration of measurement of electrical quantities in DC and AC systems.
TEXTBOOKS:	
1.	Electric Machinery,(Sixth Edition) A.E. Fitzgerald, Kingsely Jr Charles, D. Umans Stephen, Tata McGraw Hill.
2.	A Textbook of Electrical Technology,(vol. I),B. L. Theraja, Chand and Company Ltd., New Delhi.
3.	Basic Electrical Engineering, V. K. Mehta, S. Chand and Company Ltd., New Delhi.
4.	Theory and problems of Basic Electrical Engineering, (Second Edition), J. Nagrath and Kothari, Prentice Hall of India Pvt. Ltd.
REFERENCE:	
1.	Basic of Electrical Engineering, T. K. Nagsarkar and M. S. Sukhija, Oxford University Press. T. K. Nagsarkar and M. S. Sukhija, Basic of Electrical Engineering, Oxford University Press, 2011.
2.	Introduction to Electrodynamics, D. J. Griffiths, (Fourth Edition), Cambridge University Press.
3.	Engineering Circuit Analysis, William H. Hayt & Jack E. Kemmerly, McGraw-Hill Book Company Inc.
4.	Fundamentals of Electrical and Electronics Engineering, Smarjith Ghosh, Prentice Hall (India) Pvt. Ltd.

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BTCSBS105	BSC	Fundamentals of Physics	60	20	20	30	20	3	0	2	4

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SYLLABUS

UNIT I

Oscillation: Periodic motion-simple harmonic motion-characteristics of simple harmonic motion- vibration of simple spring mass system. Resonance-definition., damped harmonic oscillator – heavy, critical and light damping, energy decay in a damped harmonic oscillator, quality factor, forced mechanical and electrical oscillators.

UNIT II

Interference-principle of superposition-young's experiment: Theory of interference fringes- types of interference-Fresnel's prism-Newton's rings, Diffraction-Two kinds of diffraction- Difference between interference and diffraction-Fresnel's half period zone and zone plate- Fraunhofer diffraction at single slit-plane diffraction grating. Temporal and Spatial Coherence.

UNIT III

Polarization of light: Polarization - Concept of production of polarized beam of light from two SHM acting at right angle; plane, elliptical and circularly polarized light, Brewster's law, double refraction.
Basic Idea of Electromagnetisms: Continuity equation for current densities, Maxwell's equation in vacuum and non-conducting medium.
Semiconductor Physics: Conductor, Semiconductor and Insulator; Basic concept of Band theory.

UNIT IV

Laser and Fiber optics: Einstein's theory of matter radiation interaction and A and B coefficients; amplification of light by population inversion, different types of lasers: Ruby Laser, CO2 and Neodymium lasers; Properties of laser beams: mono-chromaticity, coherence, directionality and brightness, laser speckles, applications of lasers in engineering. Fiber optics and Applications, Types of optical fibers.

UNIT V

Thermodynamics: Zeroth law of thermodynamics, first law of thermodynamics, brief discussion on application of 1st law, second law of thermodynamics and concept of Engine, entropy, change in entropy in reversible and irreversible processes.

LABORATORY:

1.	Magnetic field along the axis of current carrying coil – Stewart and Gee
2.	Determination of Hall coefficient of semi-conductor
3.	Determination of Plank constant
4.	Determination of wave length of light by Laser diffraction method

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BTCSBS105	BSC	Fundamentals of Physics	60	20	20	30	20	3	0	2	4

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5.	Determination of wave length of light by Newton's Ring method
6.	Determination of laser and optical fiber parameters
7.	Determination of Stefan's Constant.
TEXTBOOKS:	
1.	Concepts of Modern Physics, (Fifth Edition) A Beiser, McGraw Hill International.
2.	Fundamentals of Physics, David Halliday, Robert Resnick and Jearl Walker, Wileyplus.
REFERENCE:	
1.	Optics, (Fifth Edition) Ajoy Ghatak, Tata McGraw Hill.
2.	Sears & Zemansky University Physics, Addison-Wesley.
3.	Fundamentals of Optics, (Third Edition) Jenkins and White, McGraw-Hill.

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BTCSBS106	PCC	Business Communication & Value Science - I	0	0	0	30	20	0	0	2	1

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TEACHING SCHEME:	EXAMINATION SCHEME:	CREDITS ALLOTTED:
Lectures: 3 Hr./Week	Semester Examination: 50 marks	4
Tutorials: 0 Hr. / Week	Continuous Assessment: Yes	
Lab: 2-4 Hrs. / Week	Term Work: 50 marks	

Course ID:

1.6 (Year 1 Semester 1)

	Leadership Oriented Learning (LOL)	
Nature of Course	Behavioral	
Pre requisites	Basic Knowledge of high school English	
Course Objectives:		
1	Understand what life skills are and their importance in leading a happy and well-adjusted life	
2	Motivate students to look within and create a better version of self	
3	Introduce them to key concepts of values, life skills and business communication	
Course Outcomes: **Upon completion of the course, students shall have ability to**		
C1.6.1	Recognize the need for life skills and values	[U]
C1.6.2	Recognize own strengths and opportunities	[U]
C1.6.3	Apply the life skills to different situations	[AP]
C1.6.4	Understand the basic tenets of communication	[U]
C1.6.5	Apply the basic communication practices in different types of communication	[AP]

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BTCSBS106	PCC	Business Communication & Value Science - I	0	0	0	30	20	0	0	2	1

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 Contents:	
• **Overview of the course** with immersion activity • **Overview of biz communication** • **Self-awareness, confidence and communication** • **Essentials of Business communication** • **Application of communication skills** • **Application of Life Skills** • **Assignment**	
Total Hours:	**65**
Text Books:	
	There are no prescribed texts for Semester 1 – there will be handouts and reference links shared.
Reference Books:	
1	English vocabulary in use – Alan Mc'carthy and O'dell
2	APAART: Speak Well 1 (English language and communication)
3	APAART: Speak Well 2 (Soft Skills)
4	Business Communication – Dr. Saroj Hiremath
Web References:	
1	Train your mind to perform under pressure- Simon Sinek https://www.captureyourflag.com/interview-library/simon-sinek-on-training-your-mind-to-perform-under-pressure.html
2	Brilliant way one CEO rallied his team in the middle of layoffs https://www.inc.com/video/simon-sinek-explains-why-you-should-put-people-before-numbers.html
3	Will Smith's Top Ten rules for success https://www.youtube.com/watch?v=bBsT9omTeh0

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BTCSBS106	PCC	Business Communication & Value Science - I	0	0	0	30	20	0	0	2	1

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Online Resources:	
1	https://www.coursera.org/learn/learning-how-to-learn
2	https://www.coursera.org/specializations/effective-business-communication

Assessment Methods & Levels (based on Blooms' Taxonomy)

Formative assessment (Max. Marks:20)

Course Outcome	Bloom's Level	Assessment Component	Marks
C1.6.1	Understand	Immersion (interview)	5
C1.6.2	Understand	Create Resume	4
C1.6.3	Apply	Group Assignment – community service	5
C1.6.4	Understand	Group activities	3
C1.6.5	Apply	Record a conversation	3
Summative Assessment based on End Semester Project			
Bloom's Level			
Understand	Paper Trek followed by project		50
Apply			
Analyse			

Lesson Plan

Unit No	Objective	Bloom's Level	Content	Type of Class	Duration
1	Recognize the need for life skills and values	Understand	**Overview of LOL** (include activity on introducing self)	Lecture & reflection	1 hour
			Class activity – presentation on favorite cricket captain in IPL and the skills and values they demonstrate	Activity	1 hour

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BTCSBS106	**PCC**	**Business Communication & Value Science - I**	0	0	0	30	20	0	0	2	1

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.

			Self-work with immersion – interview a maid, watchman, sweeper, cab driver, beggar and narrate what you think are the values that drive them	Immersion activity	2 hours
			Overview of business communication	Lecture with videos	1 hour
			Activity: Write a newspaper report on an IPL match	Class activity with 3 iterations - Formative Evaluation	1 hour
			Activity: Record a conversation between a celebrity and an interviewer	Class activity with 3 iterations - Formative Evaluation	1 hour
			Quiz Time	Summative Evaluation for Unit	30 mins
	Recognize own strengths and opportunities	Understand	**Self-awareness** – identity, body awareness, stress management	Anubhav Activities	4 hours
Unit No	Objective	Bloom's Level	Content	**Type of Class**	Duration
				(Please conduct at least one activity per week and	

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BTCSBS106	**PCC**	**Business Communication & Value Science - I**	0	0	0	30	20	0	0	2	1

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.

				include the Meditation session in it)	
2	Understand the basic tenets of communication Unit name: Be At Ease (BAE) (in Millennial lingo it means Before Anyone Else)	Understand	Essential Grammar – I: Refresher on Parts of Speech – Listen to an audio clip and note down the different parts of speech followed by discussion Tenses: Applications of tenses in Functional Grammar – Take a quiz and then discuss	**Lecture with audio and video**	1 hour
			Sentence formation (general & Technical), Common errors, Voices. Show sequence from film where a character uses wrong sentence structure (e.g. Zindagi Na Milegi Dobara where the characters use 'the' before every word)	**Lecture with video/audio**	1 hour
			Communication Skills: Overview of Communication Skills Barriers of communication, Effective communication		1 hour
			Types of communication- verbal and non – verbal – Role-play based learning Importance of Questioning	**Activity based learning**	1 hour
			Listening Skills: Law of nature-Importance of listening skills,	**Activity based learning**	1 hour

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Unit No	Objective	Bloom's Level	Content	**Type of Class**	Duration
			Difference between listening and hearing, Types of listening.		
	Recognize own strengths and opportunities	Understand	Expressing self, connecting with emotions, visualizing and experiencing purpose	**Anubhav Activities** **(Please conduct at least one activity per week and include the Meditation session in it)**	4 hours
	Apply the basic communication practices in different types of communication	Apply	Activity: Skit based on communication skills	**Formative Evaluation**	4 hours
			Evaluation on Listening skills – listen to recording and answer questions based on them	**Formative Evaluation**	30 mins
3	Understand the basic tenets of communication Talk Mail Write (TMW) - In Millennial it means That Moment When	Understand	Email writing: Formal and informal emails, activity	**Activity based learning**	1 hour

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			Verbal communication: Pronunciation, clarity of speech	**Audio and video based learning**	30 minutes
			Vocabulary Enrichment: Exposure to words from General Service List (GSL) by West, Academic word list (AWL) technical specific terms related to the field of technology, phrases, idioms, significant abbreviations formal business vocabulary – Read Economic Times, Reader's Digest, National Geographic and take part in a GD, using the words you learnt/liked from the articles. Group discussion using words learnt	**Activity based learning (Group Discussion) Flipped classroom where students will study words before coming to class**	1 hour
Unit No	Objective	Bloom's Level	Content	Type of Class	**Duration**
			Practice: Toastmaster style Table Topics speech with evaluation	Activity based learning	**2 hours over 2/3 days**
			Written Communication: Summary writing, story writing	Activity based learning	**1 hour**
			Build your CV – start writing your comprehensive CV including every achievement in your life, no format, no page limit	Formative Evaluation	**30 minutes**
	Apply the basic communication practices in different types of communication	Apply	Project: Create a podcast on a topic that will interest college students	Formative Evaluation	**1 hour**

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	Recognize own strengths and opportunities	Understand	Life skill: Stress management, working with rhythm and balance, colours, and teamwork	Anubhav Activities (Please conduct at least one activity per week and include the Meditation session in it)	**4 hours**
	Apply the basic communication practices in different types of communication	Apply	Project: Create a musical using the learnings from unit	Formative Evaluation	**2 hours**
4	Unit 4 Recognize the need for life skills and values Unit name: Realities of Facing Life (ROFL)	Understand	Understanding Life Skills: Movie based learning – Pursuit of Happyness. What are the skills and values you can identify, what can you relate to?	Interactive learning	**3 hours**
Unit No	Objective	Bloom's Level	Content	Type of Class	**Duration**
			Introduction to life skills What are the critical life skills	Activity and Video	**1 hour**
			Multiple Intelligences Embracing diversity – Activity on appreciation of diversity	Video and activity based	**1 hour**
	Apply the life skills to different situations	Apply	Life skill: Community service – work with an NGO and make a presentation	Field work: Formative Evaluation	**10 hours**

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			Life skill: Join a trek – Values to be learned: Leadership, teamwork, dealing with ambiguity, managing stress, motivating people, creativity, result orientation	Field work: Formative Evaluation	**12 hours**
				TOTAL	**65 hours**
	Summative Evaluation	**Bloom's Level**	**Type of Assessment**	**Marks**	**Total**
		Understand	Knowledge Test	20 marks	**50 marks**
		Apply	Project (to be evaluated by TCS)	20 marks	
		Apply	Group discussion (to be evaluated by TCS)	10 marks	

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Board of Studies,
ShriVaishnavVidyapeeth
Vishwavidyalaya, Indore

Chairperson
Faculty of Studies,
ShriVaishnavVidyapeeth
Vishwavidyalaya, Indore

Controller of Examination
ShriVaishnavVidyapeeth
Vishwavidyalaya, Indore

Registrar
ShriVaishnavVidyapeeth
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BTCSBS107	HSSM (IKS)	Indian Knowledge System(IKS)	-	-	-	0	50	2	0	0	2

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COURSE OBJECTIVES:	
The student will have ability to:	
1.	To get some knowledge about Indian Culture.
2.	To Know Indian Languages and Literature religion and philosophy and the fine arts in India.
3.	To Explore the Science and Scientists of Ancient, Medieval and Modern India.
4.	To Understand education systems in India.

COURSE OUTCOMES:	
Upon completion of the subject, students will be able to:	
1.	Understand philosophy of Indian culture.
2.	Distinguish the Indian languages and literature.
3.	Explain the philosophy of ancient, medieval and modern India
4.	Outline the information about the fine arts in India.
5.	Analyze the contribution of scientists of different eras.
6.	Understand education systems in India.

SYLLABUS

UNIT I

Introduction to Culture : Culture, civilization, culture and heritage, general characteristics of culture, importance of culture in human literature, Indian Culture, Ancient India, Medieval India, Modern India.

UNIT II

Indian Languages and Literature: Indian Languages and Literature – I: Languages and Literature of South India, – Indian Languages and Literature – II: Northern Indian Languages & Literature.

UNIT III

Religion and Philosophy: Major religions practiced in India and Understanding their Philosophy – religious movements in Modern India (Selected movements only).

UNIT IV

Fine Arts in India (Art, Technology & Engineering): Indian Painting, Indian handicrafts, Music, divisions of Indian classic music, modern Indian music, Dance and Drama, Science and Technology in India, development of science in ancient, medieval and modern India.

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BTCSBS107	HSSM (IKS)	Indian Knowledge System(IKS)	-	-	-	0	50	2	0	0	2

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UNIT V	
Education System in India: Education in ancient, medieval and modern India, aims of education, subjects, languages, Science and Scientists of Ancient India, Science and Scientists of Medieval India, Scientists of Modern India.	
TEXTBOOKS:	
1.	Kapil Kapoor, "Text and Interpretation: The India Tradition", ISBN: 81246033375, 2005.
2.	"Science in Samskrit", Samskrita Bharti Publisher, ISBN 13: 978- 8187276333, 2007.
3.	NCERT, "Position paper on Arts, Music, Dance and Theatre", ISBN 81-7450 494-X, 200.
4.	Narain, "Examinations in ancient India", Arya Book Depot, 1993.
5.	Satya Prakash, "Founders of Sciences in Ancient India", Vijay Kumar Publisher, 1989.
6.	M. Hiriyanna, "Essentials of Indian Philosophy", Motilal Banarsidass Publishers, ISBN 13: 978-8120810990, 2014.
ASSESSMENT COMPONENTS:	
1.	Students must submit a hard copy of the report on the prescribed topic or syllabus.
2.	The students will present a report through seminar, which will be held by a Faculty Coordinator constituted by the concerned department as per norms of the institute. The evaluation through seminar presentation will be based on the following criteria. a) Quality of material presented. b) Effectiveness of presentation. c) Depth of knowledge and skills.

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BTCSBS108	VSEC	Basic Programming(Python Scripting)	-	-	-	30	20	0	0	4	2

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COURSE OBJECTIVES:	
The student will have ability to:	
1.	To develop proficiency in creating based applications using the Python Programming Language.
2.	To be able to understand the various data structures available in Python programming language and apply them in solving computational problems.
3.	To be able to do testing and debugging of code written in Python.
4.	To be able to draw various kinds of plots using Py Lab.
5.	To be able to use generators for generating series like Fibonacci.

COURSE OUTCOMES:	
Upon completion of the subject, students will be able to:	
1.	Ability to create robust applications using the Python programming language
2.	Ability to test and debug applications written using the Python programming language.
3.	Ability to create applications for solving computational problems using the Python Programming Language.

SYLLABUS

UNIT I	**10 HOURS**

Introduction to Python: Introduction to programming, Python IDE, Python Interpreters, Interpreter vs. Compiler, The basic elements of Python, Python Data types, mathematical operations and working with numbers. Testing and debugging. Modules.

UNIT II	**9 HOURS**

Data Structures: Control statement and loops. Python data structures, lists, tuples, dictionaries, sets, zip and their operations. Mutability and Immutability. Functions and Magic Methods.

UNIT III	**8 HOURS**

Exceptions and assertions: Handling exceptions, Exceptions as a control flow mechanism, Assertions. Classes and Object oriented Programming: Abstract Data Types and Classes, Inheritance, Encapsulation and information hiding.

UNIT IV	**10 HOURS**

Numpy and Pandas: Python list vs. NumPy arrays, Creating a NumPy Array, Basic ndarray, Shape of NumPy array, Size of NumPy array, Random numbers in ND array, The Shape and Reshaping of NumPy Array,

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Dimensions of NumPy array, Reshaping a NumPy array, Flattening a NumPy array, Pandas Data Frames, Indexing in Pandas using loc and iloc.

UNIT V **8 HOURS**

Matplotlib: Matplotlib Introduction, Line Chart, Scatter Plot, Bar Graph, Histogram, Subplots, Pie Chart, Pyplot, Matplotlib with Pandas and Numpy. Specify Color, Markings and Lline Styles, Adjust Thickness, Label Tilte, and Legend

TEXTBOOKS:

1.	John V Guttag. “Introduction to Computation and Programming Using Python”, Prentice Hall of India
2.	Allen Downey, Jeffrey Elkner and Chris Meyers "How to think like a Computer Scientist, Learning with Python", Green Tea Press.
3.	Mark Lutz "Learning Python" O'Reilly Media; 5 editions.
4.	David Beazley "Python Cookbook, Third edition" O'Reilly Media

REFERENCES:

1.	Python Essential Reference, 4th Edition Addison-Wesley Professional.
2.	Mark Lutz "Programming Python: Powerful Object-Oriented Programming "David Beazley "Python Cookbook" Third edition, O'Reilly Media

LIST OF EXPERIMENTS:

1.	Write a Python Program to Print Hello world!
2.	Write a program to demonstrate different number data types in Python.
3.	Write a program to perform different Arithmetic Operations on numbers in Python.
4.	Write a Program to Swap Two Variables.
5.	Write a Program to Convert Celsius to Fahrenheit.
6.	Write a Program to Find the Largest Among Three Numbers.
7.	Write a Program to Check Prime Number.
8.	Write a Program to Find the Factorial of a Number.
9.	Write a Program to Print the Fibonacci sequence.
10	Write a program to create, append, and remove lists in python.
11.	Write a program to demonstrate working with tuples in python.
12.	Write a program to demonstrate working with set in python.
13.	Write a program to demonstrate working with dictionaries in python.

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14.	Write a program to find reverse of given number using function.
15.	Write a python Program to call data member and function using classes and objects
16.	Write a program to read 3 subject marks and display pass or failed using class and object.
17.	Write a program in Python to handle user defined exception for given problem
18.	Write a program using a Numpy module to create an array and check the following: a. Type of array b. Axes of array c. Shape of array c. Type of elements in array
19.	Write a python program to concatenate the data frames with two different objects
20.	Write a Python program to Demonstrate how to Draw a Scatter Plot, Bar Graph and Pie Chart using Matplotlib.