



ST. VINCENT PALLOTTI COLLEGE OF ENGINEERING & TECHNOLOGY, NAGPUR

(An Autonomous institution affiliated to Rashtrasant Tukadoji Maharaj Nagpur University)

B. Tech. Scheme of Examination & Syllabus 2025-26

Computer Science and Business Systems

GROUP 1(CSBS): SEMESTER I

Sr No	Course Category	Course Code	Course Title	Hours per Week			Credits	Maximum Marks				Duration No. of Hrs for ESE
				L	T	P		Mid-Sem Examination	Continual Assessment	End Sem Examination	Total	
1	BSC	25CB101T	Discrete Mathematics	3	-	-	3	20	20	60	100	3
2	BSC	25CB102T	Introductory Topics in Statistics, Probability and Calculus	3	-	-	3	20	20	60	100	3
3	ESC	25CB103T	Fundamentals of Computer Science	3	-	-	3	20	20	60	100	3
4	ESC	25CB103P	Fundamentals of Computer Science Lab	-	-	2	1	-	25	25	50	1.5
5	ESC	25CB104T	Principles of Electrical Engineering	2	-	-	2	10	10	30	50	1.5
6	ESC	25CB104P	Principles of Electrical Engineering Lab	-	-	2	1	-	25	25	50	1.5
7	BSC	25CB105T	Fundamentals of Physics	2	-	-	2	10	10	30	50	1.5
8	BSC	25CB105P	Fundamentals of Physics Lab	-	-	2	1	-	25	25	50	1.5
9	PCC	25CB106P	Business Communication and Value Science - I	-	-	2	1	-	25	25	50	1.5
10	HSSM	25CB107T	Indian Knowledge System	2	-	-	2	10	10	30	50	1.5
11	VSEC	25CB108P	Python Scripting/Basic Programming	-	-	2	1	-	25	25	50	1.5
			Induction Program (Non Credit)									
Total				15	0	10	20	90	215	395	700	

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B. Tech. Scheme of Examination & Syllabus 2025-26

Computer Science & Business Systems

FIRST SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation			
						MSE	CA	ESE	Total
25CB101T	Discrete Mathematics	3	-	-	3	20	20	60	100

Course Objectives	Course Outcomes
<p>The aim of this course is</p> <ul style="list-style-type: none"> To understand the concepts of graph theory and related algorithm concepts. To understand the concepts of algebraic structures, logic, set theory. 	<p>On completion of the course, students will be able to</p> <ul style="list-style-type: none"> Apply Boolean algebra in Logic gates and Karnaugh map Identify various types of sets, relations and algebraic structures Apply counting techniques to solve combinatorial problems Identify and apply concepts of graph theory and graph colouring Apply logical thinking skills.

Unit I : Boolean algebra:	[8Hrs]
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:	[8Hrs]
Set, relation, group, ring, field.	
Unit III : Combinatorics:	[8Hrs]
Basic counting, balls and bins problems, generating functions, recurrence relations. Proof techniques, principle of mathematical induction, pigeonhole principle	
Unit IV : Graph Theory:	[8Hrs]
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 :	[8Hrs]
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.	

Text Books

S.N	Title	Authors	Edition	Publisher
1.	Discrete Mathematical Structures	Kolman, Busby & Ross	3rd	PHI
2.	Discrete Mathematical Structures with Applications to Computer Science	Tremblay & Manohar		Tata McGraw- Hill.

Reference Books

S.N	Title	Authors	Edition	Publisher
1.	Discrete Maths for Computer Scientists & Mathematicians	Mott, Kandel, Baker		Pearson
2.	Discrete Mathematics	Lipschutz		McGraw Hill Professional,
3.	Elements of Discrete Mathematics	C. L. Liu		McGraw Hill Education India.
4.	Digital Logic & Computer Design	M. Morris Mano		Pearson

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Computer Science & Business Systems



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B. Tech. Scheme of Examination & Syllabus 2025-26

Computer Science & Business Systems

FIRST SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation			
						MSE	CA	ESE	Total
25CB102T	Introductory Topics in Statistics, Probability and Calculus	3	--	--	3	20	20	60	100

Course Objectives	Course Outcomes
<ol style="list-style-type: none"> To study the basic probability concepts and have a well-founded knowledge of standard distributions which can be used to describe real-life phenomena To learn the concepts of evaluation using statistical analysis To acquaint with the concepts of calculus needed for problems in all engineering disciplines 	<p>Students will be able to:</p> <ol style="list-style-type: none"> Explain the basics of Statistics and types of data. Interpret the graphical representation of data in Statistics and solve Statistical problems. Recall the concepts of basic Probability. Apply the concept of Probability distributions to Engineering problems & use them in cluster analysis of similar binary variables. Evaluate double & triple integrals to compute Area, Mass, Center of gravity for two-dimensional and volume for three-dimensional solid structures.

Unit I	[5Hrs]
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	[10Hrs]
Descriptive Statistics: Classification and tabulation of univariate data, graphical representation, Frequency curves, Frequency Polygon, Pie Charts. Descriptive measures: Central tendency (Mean, Mode, Median) and dispersion. Bivariate data. Summarization, marginal and conditional frequency distribution (Problems only), Scatter diagram: Linear regression – Fitting of curve by Least squares method – correlation (Karl Pearson's)- Rank correlation (Spearman's).	
Unit III	[10Hrs]
Probability: Concept of experiments, sample space, event. Definition of Combinatorial Probability, Definition of Conditional Probability, Baye's Theorem (statement only) – simple Problems. Random variable, Expected values and moments: Mathematical expectation and its properties (statements only), Moments (first four moments about Mean & origin) and their properties, Moment generating function -Definition & simple problems, Definition & simple properties of coefficient of Skewness & Kurtosis.	
Unit IV	[10Hrs]
Probability distributions: Discrete & continuous distributions- Binomial, Poisson and Geometric distributions, Uniform, Exponential, Normal, Chi-square, t, F distributions.	
Unit V	[10Hrs]
Calculus: Basic concepts of Differential and Integral calculus - evaluation of elementary Double and Triple integrals (cartesian Coordinates), Application of Double Integral (Area, Mass, Center of Gravity) and Triple integral (Volume) [Cartesian Coordinates].	

Text Books

S.N	Title	Authors	Edition	Publisher
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 Books

S.N	Title	Authors	Edition	Publisher
1	Applied Mathematics, Vol. I & II	P. N. Wartikar and J. N. Wartikar		Vidarthi Prakashan
2	Advanced Engineering Mathematics, (Second Edition)	M. D. Greenberg		Pearson Education
3	Advanced Engineering Mathematics, (Seventh Edition)	Peter V. O'Neil		Thomson Learning
4	Probability and Statistics for Engineers, (Fourth Edition)	I. R. Miller, J.E. Freund and R. Johnson		PHI

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B. Tech. Scheme of Examination & Syllabus 2025-26

COMPUTER SCIENCE & BUSINESS SYSTEMS

FIRST SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation			
						MSE	CA	ESE	Total
25CB103T	Fundamentals of Computer Science	3	-	-	3	20	20	60	100

Course Objectives	Course Outcomes
1. To understand problem solving concepts. 2. To learn operators and expressions in C. 3. To gain knowledge about the control structures in C. 4. To write C programs using arrays, functions, pointers, structures and files. 5. To learn Unix system interface and programming method.	CO1: To understand simple algorithms for arithmetic and logical problems CO2: To understand different types of loops. Structured & unstructured programming. CO3: To design C Programs using basic programming constructs, arrays and strings CO4: To develop applications in C using functions, pointers, and structures CO5: To do input/output and File handling in C

Unit I	[10 Hrs]
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	[8Hrs]
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 unstructured programming.	
Unit III	[8Hrs]
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, Initialization, Recursion, Pre-processor, Standard Library Functions, and return types.	
Unit IV	[10Hrs]
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, Initialization 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	[6Hrs]
Input and Output: Standard I/O, Formatted Output – printf, Formatted Input – scanf, Variable length argument list, file access including FILE structure, fopen, stdin, stdout and stderr, Error Handling including exit, perror and error.h, Line I/O, related miscellaneous functions.	

Text Books

S.N	Title	Authors	Edition	Publisher
1	The C Programming Language	B. W. Kernighan and D. M. Ritchi	Second Edition	PHI
2	Programming in C	B. Gottfried	Second Edition	Schaum Outline Series

S.N	Title	Authors	Edition	Publisher
1	C: The Complete Reference	Herbert Schildt	Fourth Edition	McGraw Hill
2	Let Us C	Yashavant Kanetkar		BPB Publications

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**FIRST SEMESTER**

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
						CA	ESE	Total
25CB103P	Fundamentals of Computer Science Lab	-	-	2	1	25	25	50

Course Objectives	Course Outcomes
1. To understand problem solving concepts. 2. To learn operators and expressions in C. 3. To gain knowledge about the control structures in C. 4. To write C programs using arrays, functions, pointers, structures and files. 5. To learn Unix system interface and programming method.	CO1: To understand simple algorithms for arithmetic and logical problems CO2: To understand different types of loops. Structured & unstructured programming. CO3: To design C Programs using basic programming constructs, arrays, and strings CO4: To develop applications in C using functions, pointers and structures CO5: To do input/output and File handling in C

List of Experiments: Various problem statements can be implemented in mentioned below objectives

Sr. No.	Aim of Practical
1	To study and implement conditional statement along with logical operators
2	To study and implement the concept of loops in C
3	To study and implement nested for loop.
4	To study and implement various patterns using nested for loops.
5	To understand the concept of while loop, do-while loop, and break and continue keywords.
6	To understand the concept of menu-driven programming.
7	To understand the concept of 1 dimensional array
8	To understand the concept of 2-dimensional array
9	To understand the concept of functions in C
10	To understand various in-built functions. Explore math.h
11	To understand the concept of pointers
12	To understand the concept of structures

Text Books

S.N	Title	Authors	Edition	Publisher
1	The C Programming Language	B. W. Kernighan and D. M. Ritchi	Second Edition	PHI
2	Programming in C	B. Gottfried	Second Edition	Schaum Outline Series

S.N	Title	Authors	Edition	Publisher
1	C: The Complete Reference	Herbert Schildt	Fourth Edition	McGraw Hill
2	Let Us C	Yashavant Kanetkar		BPB Publications

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B. Tech. Scheme of Examination & Syllabus 2025-26

COMPUTER SCIENCE & BUSINESS SYSTEM

FIRST SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation			
						MSE	CA	ESE	Total
25CB104T	Principles of Electrical Engineering	2	-	-	2	10	10	30	50

Course Objectives	Course Outcomes
1. To remember the basic concepts in dc circuits with laws and theorems. 2. To analyze the ac electrical 3. To understand sensors, transducers and the signal measuring devices.	CO1 Know the basic concepts of work, power, energy for electrical systems and laws & theorems in dc circuit. CO2 Understand and analyze ac electrical network CO3 Understand the basics of sensors, transducers and measuring instruments

Unit I Concept of DC Network	[10 Hrs]
Fundamentals of work, power and energy. current-voltage relation, voltage source and current sources, ideal and practical sources, Series parallel, star delta transformation. Kirchhoff's laws and applications to network solutions using mesh and nodal analysis, Superposition Theorem.	

Unit II Concept of AC Network	[10 Hrs]
Concept of ACAC 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 Measurements and Sensors	[10 Hrs]
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.	

Text Books

S.N	Title	Authors	Edition	Publisher
1	<i>Electric Machinery</i>	A. E. Fitzgerald, Kingsely Jr Charles, D. Umans Stephen,	6 th	Tata McGraw Hill.
2	<i>A Textbook of Electrical Technology, (vol. I)</i>	B. L. Theraja, Chand and Company Ltd., New Delhi.	vol. I	Chand and Company Ltd., New Delhi.
3	<i>Basic Electrical Engineering</i>	V. K. Mehta		S. Chand and Company Ltd., New Delhi.
4	<i>Theory and problems of Basic Electrical Engineering,</i>	J. Nagrath and Kothari	Second Edition	Prentice Hall of India Pvt. Ltd.

Reference Books

S.N	Title	Authors	Edition	Publisher
1	<i>Basic of Electrical Engineering</i>	T. K. Nagsarkar and M. S. Sukhija		Oxford University Press, 2011.
2	<i>Introduction to Electrodynamics,</i>	D. J. Griffiths,	Fourth Edition	Cambridge University Press.
3	<i>Engineering Circuit Analysis,</i>	William H. Hayt & Jack E. Kemmerly,		McGraw-Hill Book Company Inc.

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COMPUTER SCIENCE & BUSINESS SYSTEM

FIRST SEMESTER



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COMPUTER SCIENCE & BUSINESS SYSTEM

FIRST SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
						CA	ESE	Total
25CB104P	Principles of Electrical Engineering Lab	-	-	2	2	25	25	50

Course Objectives	Course Outcomes
1. To remember the basic concepts in DC circuits with laws and theorems. 2. To analyze the AC electrical 3. To understand sensors, transducers, and the signal measuring devices.	CO1 Know the basic concepts of work, power, energy for electrical systems and laws & theorems in DC circuits. CO2 Understand and analyze an electrical network CO3 Understand the basics of sensors, transducers, and measuring instruments

Expt. No.	Title of the experiment
1	To verify KCL & KVL for D.C. Circuit.
2	To verify Superposition Theorem.
3	To study series RLC Circuit.
4	To study balanced three phase AC Circuit.
5	To plot B-H Curve of a magnetic material
6	To study single phase step up & step down transformer
7	Visit SVP CET substation
8	To study the operation of Fuse & MCB (Safety Device).
9	Visit to Programmable Logic Controller (PLC) lab.

Text Books

S.N	Title	Authors	Edition	Publisher
1	<i>Electric Machinery</i>	A. E. Fitzgerald, Kingsley Jr Charles, D. Umans Stephen,	6 th	Tata McGraw Hill.
2	<i>A Textbook of Electrical Technology, (vol. I)</i>	B. L. Theraja, Chand and Company Ltd., New Delhi.	vol. I	Chand and Company Ltd., New Delhi.
3	<i>Basic Electrical Engineering</i>	V. K. Mehta		S. Chand and Company Ltd., New Delhi.
4	<i>Theory and problems of Basic Electrical Engineering,</i>	J. Nagrath and Kothari	Second Edition	Prentice Hall of India Pvt. Ltd.

Reference Books

S.N	Title	Authors	Edition	Publisher
1	<i>Basic of Electrical Engineering</i>	T. K. Nagsarkar and M. S. Sukhija		Oxford University Press, 2011.
2	<i>Introduction to Electrodynamics,</i>	D. J. Griffiths,	Fourth Edition	Cambridge University Press.
3	<i>Engineering Circuit Analysis,</i>	William H. Hayt & Jack E. Kemmerly,		McGraw-Hill Book Company Inc.

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**FIRST SEMESTER (GROUP-III)**

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation			
						MSE	CA	ESE	Total
25CB105T	Fundamentals of Physics	2	--	--	2	10	10	30	50

Course Objectives	Course Outcomes
This course is intended 1. To understand the basic laws of physics and their application in engineering and technology. 2. To develop scientific temper and analytical capability.	Students will be able to 1. Describe the Concepts of Oscillations. 2. Describe various phenomenon of Optics. 3. Distinguish the types of solids on the basis of conductivity and acquire a brief idea about semiconductors. 4. Describe the properties and applications of various types of LASERS and Optical Fibers.

Unit I OSCILLATIONS	[10 Hrs]
Oscillations- Periodic motion-simple harmonic motion-characteristics of simple harmonic motion. Resonance-definition, damped harmonic oscillator – heavy, critical and light damping.	
Unit II OPTICS & SEMICONDUCTOR PHYSICS	[10 Hrs]
Interference- Principle of superposition, types of interference- -Newton's rings. Diffraction-Two kinds of diffraction, Difference between interference and diffraction. Semiconductor Physics: Conductor, Semiconductor and Insulator; Basic concept of Band theory, Fermi Energy, Fermi Dirac Distribution Function, Numericals.	
Unit III LASER AND FIBER OPTICS	[09 Hrs]
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 Laser; Properties of laser beams: mono- chromaticity, coherence, directionality and brightness, applications of lasers in engineering. Fiber optics and Applications, Types of optical fibers.	

Text Books

S.N	Title	Authors	Edition	Publisher
1	Fundamentals of Physics	David Halliday, Robert Resnick and Jerle Walker	8e extended	John-Wiley India
2	Electronic Engineering Materials and Devices	John Allision	edition 10th reprint	TMH
3	Engineering Physics	M. N. Avadhanulu	Latest edition	S. Chand & Co.

Reference Books

S.N	Title	Authors	Edition	Publisher
1	Solid State Physics	Charles Kittel	Eighth edition	John Wiley & Sons, Inc
2	Solid State Physics	R.L. Singhal	Eighth edition	Kedarnath Ramnath
3	Optics	AjoyGhatak	Fifth Edition	, Tata McGraw Hill

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COMPUTER SCIENCE AND BUSINESS SYSTEM

FIRST SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
						CA	ESE	Total
25CB105P	Fundamentals of Physics Lab	--	--	2	1	25	25	50

Course Objectives	Course Outcomes
This course is intended 1. To understand the basic laws of physics and their application in engineering and technology. 2. To develop scientific temper and analytical capability.	Students will be able to 1. Verify principles/laws by selecting and using proper measuring instruments, interpret result and draw conclusions. 2. Find various parameters using various properties of light. 3. Apply the concepts of Semiconductors and Magnetic Materials. 4. Apply the concepts of Quantum Physics. 5. Apply the concepts of Thermodynamics.

Expt. No.	Title of the experiment
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.
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.

Text Books

S.N	Title	Authors	Edition	Publisher
1	Fundamentals of Physics	David Halliday, Robert Resnick and Jerle Walker	8e extended	John-Wiley India
2	A Textbook of Engineering Physics	Dr. M. N. Avdhanulu, Dr. P. G. Kshirsagar	Latest edition	S. Chand Publication.
3	Principles of Physics	David Halliday, Robert Resnick, Jearl Walker	10th Edition	John Wiley and Sons (2017)

Reference Books

S.N	Title	Authors	Edition	Publisher
1	Solid State Physics	Charles Kittel	Eighth edition	John Wiley & Sons, Inc
2	Solid State Physics	R.L. Singhal	Eighth edition	Kedarnath Ramnath
3	University Physics	Young and Freedman	Fifteenth edition	Pearson Education

Online Resources

1	https://www.britannica.com/science/semiconductor#ref233890
2	https://www.geeksforgeeks.org/semiconductors/
3	https://www.sciencedirect.com/topics/chemistry/magnetic-material

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DEPARTMENT OF COMPUTER SCIENCE AND BUSINESS SYSTEMS

FIRST SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
						CA	ESE	Total
25CB106P	Business Communication and Value Sciences- I Lab	-	-	2	1	25	25	50

Course Objectives	Course Outcomes
To empower students to develop a career oriented mindset while harnessing the power of LSRW skills.	Students will be able to: 1. apply verbal and non-verbal skills to confidently and effectively deliver presentations. 2. prepare themselves for overall language ability through listening and reading tasks. 3. demonstrate formal writing skills. 4. draft impactful Resumes and Cover Letters. 5. prepare themselves for Personal Interviews.

Expt. No.	Title of the experiment
1	Presentation Skills
2	Poster Making (Product/ Event)
3	Reading Comprehension for Competitive Exams.
4	Writing Skills for Academic Purposes.
5	Listening Skills I
6	Business Correspondence I
7	Resume Writing and Cover Letter
8	Mock Interviews

Reference Books

S. N	Title	Authors	Edition	Publisher
1	Communication Skills for Engineers	C. Muralikrishna & Sunita Mishra	2nd Edition, 2011	Pearson India Education Services
2	Communication Skills	Dr. L. Bisen, Dr. B. Agrawal & Dr. N. T. Kalyani	1st Edition, 2021	Himalaya Publishing House
3	Barron's IELTS Superpack	Lin Lougheed	2012	Barrons Educational Series

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**COMPUTER SCIENCE AND BUSINESS SYSTEMS****FIRST SEMESTER**

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation			
						MSE	CA	ESE	Total
25CB107T	INDIAN KNOWLEDGE SYSTEM	2		-	2	10	10	30	50

Course Objectives	Course Outcomes
<p>This course is intended to</p> <ul style="list-style-type: none">To understand the distinctive features of Indian Knowledge Traditions.To explore India's contributions in science, mathematics, astronomy, technology, and architecture.To connect IKS concepts with modern applications and sustainable practices.	<p>Students will be able to</p> <ul style="list-style-type: none">Comprehend the foundations of Indian Knowledge System and its difference from Western approaches.Analyze India's contributions in mathematics, astronomy, and technology.Appreciate the relevance of art, architecture, and traditional sciences in modern contexts.

Unit I FOUNDATIONS OF IKS	[8Hrs]
Introduction to the Indian Knowledge System with its distinctive features in contrast to Western thought, the Vedic corpus including the Vedas, Upaniṣads, and associated philosophical traditions, knowledge traditions of Śikṣā dealing with phonetics, Vyākaraṇa focusing on grammar, Nirukta exploring etymology, Chandas emphasizing prosody, Kalpa codifying rituals and social duties, Jyotiṣa concerning astronomy and timekeeping, and reflective Discover IKS activities based on case studies and experiential learning.	
Unit II SCIENTIFIC AND TECHNOLOGICAL CONTRIBUTIONS	[8Hrs]
Mathematics including the number system, importance of zero, contributions of Brahmagupta, developments in geometry and algebra, ancient Indian astronomy and its observations, contributions of Parāśara and Garga, connections between astronomical knowledge and Vedic rituals, engineering and technology in ancient India covering metallurgy and advanced metalworking, healthcare practices and their scientific basis, construction of granite structures and architectural precision, Harappan technology and innovations in urban planning, maritime traditions and shipbuilding heritage, case studies on the works of Indian mathematicians, the astronomical observatory of Jantar Mantar, and the corrosion-resistant Iron Pillar of Delhi.	
Unit III Art, Architecture & Sustainable Knowledge	[8Hrs]
Town planning traditions from the Harappan civilization to classical India, rock-cut architecture including the Ellora caves, Kailasanātha temple, and Buddhist cave traditions, principles of temple design and Vastu Shastra, indigenous engineering in art and architecture blending aesthetics, science, and spirituality, relevance of IKS in contemporary contexts through sustainability, holistic living, and eco-conscious design.	

Text Books

Sr. No.	Title	Authors	Edition	Publisher
1	Indian Knowledge System	Kapil Kapoor & Michel Danino(Eds.)	1 st	PHI Learning
2	Foundations of Indian Culture and Knowledge System	B. L. Atreya	Reprint	Bharatiya Vidya Bhavan
3	Essays on Indian Knowledge Systems	Michael Danino	1 st	AICTE – IKS Division

Reference Books

Sr. No.	Title	Authors	Edition	Publisher
1	Indian Knowledge Systems: Nature, Philosophy and Manifestation	Bal Ram Singh, Pushpesh Pant	1 st	Pratibha Prakashan
2	The Science and Technology in Ancient India	Debiprasad Chattopadhyaya	Reprint	People's Publishing House

		JULY 2025	1.0	Applicable for 2025-26
Chairman -BoS	Dean-Academic	Date of Release	Version	



ST. VINCENT PALLOTTI COLLEGE OF ENGINEERING & TECHNOLOGY, NAGPUR

(An autonomous institution affiliated to Rashtrasant Tukadoji Maharaj Nagpur University)

B. Tech. Scheme of Examination & Syllabus 2025-26

Computer Science & Business Systems

FIRST SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
						CA	ESE	Total
25CB108P	Python Scripting / Basic Programming			2	1	25	25	50

Course Objectives	Course Outcomes
<p>This course is intended</p> <ul style="list-style-type: none">• To introduce the fundamental paradigms of programming languages.• To provide hands-on experience in enhancing problem-solving skills using a programming environment.• To study and compare the features of different programming languages.• To learn Python as a versatile and widely used programming language for computational problem-solving.	<p>Student will able to</p> <ul style="list-style-type: none">• Apply the fundamental concepts of Python programming• Develop programs using control and data structures.• Demonstrate the ability to use functions, modules and basic libraries.

Expt. No.	Title
1	(A). Installation of Latest Python version from Genuine Website, its installation process, path setting & its testing. (B) Implementation of some python program on interaction mode
2	Write Python programs to demonstrate the use of different operators.
3	Implement Python programs using various conditional statements.
4	Develop Python programs using different looping constructs.
5	Create and manipulate lists and tuples using Python programs.
6	Implement programs to work with sets and dictionaries in Python.
7	Write Python programs using functions to promote modularity and reusability.
8	Develop Python programs utilizing modules and libraries for problem solving.

Text Books

S.N	Title	Authors	Edition	Publisher
1	Python Programming using problem solving Approach	Reema Theraja	First Edition, 2017.	Oxford Univ. Pres
2	A Byte of Python	C. H. Swaroop	Edition2.1	Swaroop C H

Reference Books

S.N	Title	Authors	Edition	Publisher
1	Python: The Complete Reference	Martin C. Brown	First Edition, 2017.	Oxford Univ. Press

		July 2025	1	Applicable for 2025-26
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