DEVI AHILYA VISHWAVIDYALAYA, INDORE

FACULTY OF ENGINEERING

FRAMEWORK OF SCHEME

II Year B. Tech. Programme (As Per AICTE Guideline)

(Computer Science and Business Systems)

INSTITUTE OF ENGINEERING & TECHNOLOGY

(www.ietdavv.edu.in)

DEVI AHILYA VISHWAVIDYALAYA, INDORE

INSTITUTE OF ENGINEERING & TECHNOLOGY

SCHEME OF EXAMINATION FOR II B.Tech PROGRAMME

(As per AICTE guideline and NEP 2020)

Semester-III

S.No.	Course Code	Course Name	Type	CI(L+T)-LI-TW+SL) (Hours/Semester)	Credits* (Total Hrs/30)
1.	3RBPC1	Formal language and Automata Theory	PC	20+10-00-60	3
2.	3RBPC2	Computer Organization and Architecture	PC	20+10-20-70	4
3.	3RBPC3	Object Oriented Programming	PC	20+10-20-70	4
4.	3RBPC4	Database Management Systems	PC	20+10-20-70	4
5.	3RBPC5	Artificial Intelligence	PC	20+10-20-70	4
6.	3RBHS1	Indian Constitution and Information Technology Act	HS	20+10-00-60	3
TOTAL CREDITS					**22**

This is as per the new National Credit Framework, which accounts for 30 hrs. of learning as equivalent to 1 credit.* **Legend:

a) BS-Basic Science, ES-Engineering Science, HS-Humanities and Social Science including Management, PC-Programme Core, IK- Indian Knowledge System
b) CI: Classroom Instruction (Includes different instructional/implementation strategies i.e. Lecture (L), Tutorial (T), Case method, Demonstrations, Video demonstration, Problem based learning etc. to deliver theoretical concepts)
c) LI: Laboratory Instruction (Includes experiments/practical performances /problem based experiences in laboratory, workshop, field or other locations using different instructional/Implementation strategies)
d) TW: Term work (includes assignments, seminars, micro projects, industrial visits, any other student activities etc.)
e) SL: Self Learning, MOOCs, spoken tutorials, online educational resources etc. (If provided in curriculum structure.)

<table>
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Institute of Engineering and Technology</td><td colspan="4">II Year B.Tech. (Computer Science and Business Systems) III Sem</td></tr>
<tr><td>Course Code & Name</td><td colspan="6">Instructions Hours per Semester and Credits</td></tr>
<tr><td rowspan="3">3RBPC1: Formal Language and Automata Theory</td><td colspan="2">Classroom Instruction (CI)</td><td>Lab Instruction (LI)</td><td>Term Work (TW) and Self Learning (SL)</td><td>Total no. of Hours Per Semester</td><td>Total Credits (Total Hours/30)</td></tr>
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</table>

Course Learning Objectives:

- To understand the fundamentals of automata theory, formal language and computation models.
- To design and analyze finite automata, Regular expression and Grammar.
- To Construct and Context fee Grammars and Push down Automata.
- To understand the work and application of Turning Machine.
- To analyze decidability and undecided ability problems.
- To explore the basics of computational complexity (P, NP, NP-Complete, NP- hard).

Prerequisites: Discrete mathematics, data structure and programming language**.**

COURSE CONTENTS

Unit I

Introduction: Alphabet, String and language, Automata and Grammar, Deterministic finite automata- Definition, Simplified notation- state transition graph, Transition table, Non-Deterministic finite automata (NFA), production, Chomsky hierarchy of language.

CO Mapped: CO1

Unit II

Regular language and finite automata: Regular expression and language, Deterministic finite automata and equivalence with regular expression, non-deterministic finite automata with DFA, regular grammar and equivalence with finite automata, properties of regular language, kleens theorem, pumping lemma for regular language, Myhill Nerode theorem and it's use, minimization of finite automata.

CO Mapped: CO2

Unit III

Context free language and Push down Automata Context free grammar (CFG) and language (CFL), chomsky and Greibachnormal forms, non-deterministic. Push down Automata (PDA) and equivalence with, CFG, parse trees ambiguity in CFG pumping lemma for context free language, deterministic pushdown automata, closure properties of CFLs.

CO Mapped: CO3

Unit IV

Context sensitive language (CSG) and language, linear bounded automata and equivalence with CSG.

CO Mapped: CO4

Unit V

Turning Machine -The basic model for turning machine Turing recognition (recursively enumerable) and Turing decidable (recursive) language and their closure properties, variant of Turning Machine, Non-deterministic Turing machine and equivalence with deterministic TMs un-restricted grammar and equivalence with Turing machine TM, enumerator. Complexity of deterministic and non-deterministic Turing machine P and NP, NP complete cook's theorem, the NP-Complete problem.

CO Mapped: CO5

Course Outcomes (CO):

CO. No.	CO
CO1	Formal language, grammar and Automata theory to describe computational problem.
CO2	Design and analyze finite automata Regular expression and Context fee Grammar language.
CO3	Construct and evaluate push down Automata and Turing machine solving computational problem.
CO4	Distinguish between decidable and undecided le problem pumping lemma.
CO5	Demonstrate understanding of computational complexity by P, NP, NP complete and NP hard problem.

Books Recommended:

[1] Formal language to Automata theory Peter 5th edition
[2] Automata and computability John E. hopcrofft, Rajeev Motwani, Jeffery D. ullman.

CO-PO-PSO Relationship:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
3RBPC1.CO1	3	2	1	1	1	-	-	-	-	-	-	3	2	1
3RBPC1.CO2	3	3	2	2	1	-	-	-	-	-	-	2	3	1
3RBPC1.CO3	3	3	2	2	2	-	-	-	-	-	-	3	2	1
3RBPC1.CO4	3	3	2	2	2	1	-	-	-	-	-	2	3	1
3RBPC1.CO5	3	3	2	2	2	3	1	-	-	-	-	3	2	1

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<tr><td rowspan="3">3RBPC2: Computer Organization and Architecture</td><td colspan="2">Classroom Instruction (CI)</td><td>Lab Instruction (LI)</td><td>Term Work (TW) and Self Learning (SL)</td><td>Total no. of Hours Per Semester</td><td>Total Credits (Total Hours/30)</td></tr>
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Course Learning Objectives:

- Provide a framework for understanding the fundamentals of computing.
- To familiarize students with relationship between hardware and software to focus on the concepts that are the basis for current computers.
- Develop skills to understand how to design a computer.
- Develop ability to understand how to enhance performance of a computer system.

Prerequisites: Knowledge of Digital Electronics and Computer Programming.

COURSE CONTENTS

Unit-I

Introduction: Difference between Computer Organization and Computer Architecture, Computer Types, Flynn's Classification, Functional Units, Basic Operational Concepts: Bus Structures, Software; Performance: Processor Clock, Basic Performance Equation, Clock Rate, Compiler, Performance Measurement; Multiprocessors and Multi-computers, Historical Perspective: Generation of computer, Evolution of Performance; Arithmetic for Computers: Addition and Subtraction of Signed Numbers, Multiplication of Positive Numbers, Booth Algorithm, Floating Point Arithmetic: Addition and Multiplication.

CO Mapped: CO1

Unit-II

Memory System: Basic Concepts, Semiconductor RAM Memories, Read-Only Memories: ROM, PROM, EPROM, EEPROM, Flash Memory; Memory Speed, Size and Cost Considerations; Cache Memories: Mapping Functions, Replacement Algorithms, Performance Considerations, Hit Rate and Miss Penalty, Caches on the Processor Chip; Virtual Memories: Address Translation; Memory Management Requirements.

CO Mapped: CO2

Unit III

Processing Unit: Addressing Modes, Connections between the Processor and the Memory, Processor Activity, Instruction cycle, John Von Neumann Architecture, State Machine Concept, Processor as a State Machine, Data Path Architecture, and Data Path Controller: Microprogrammed; Hardwired Design, Firmware Design, Microcontroller Design, Design of Flip-Flop to understand the Design of CPU.

CO Mapped: CO3

Unit IV

Input Output Organization: I/O Devices: Introduction, Typical Collection, Diversity; Dependability, Reliability, Availability, Disk Storage, Flash Storage, Connecting Processor Memory and I/O Devices, Connection Basics, Interfacing I/O Devices to the Processor Memory and Operating System: Give Commands to I/O Devices, Communication with the Processor, Interrupt Priority Levels, Transferring the Data between a Device and Memory, Direct Memory Access and the Memory System; I/O Performance Measures, Impact of I/O on System Performance.

CO Mapped: CO4

Unit-V

Pipelining & Multiprocessors: Principles of Pipelining, Principles of Linear Pipelining, Clock Period, Speedup, Efficiency, Throughput, Classification of Pipeline Processor, General Pipelines and Reservation Tables, Collision Vector, State Diagram for a Pipeline, Pipeline Hazards, Shared Memory Multiprocessors, Clusters and Other Message-Passing Multiprocessors, Introduction to Graphics Processing Units, Introduction to Multiprocessor Network Topologies.

CO Mapped: CO5

Course Outcomes (CO):

CO. No.	CO
CO1	Study of the basic structure and operation of a digital computer system.
CO2	Understand the architecture and functionality of central processing unit.
CO3	Exemplify in a better way the I/O and memory organization.
CO4	Apply acquired knowledge to improve performance of a computer.
CO5	In addition to development in technology, student will be able to innovate in the architecture of computers, such as the use of caches and pipelining

List of Practical:

1. Circuits on breadboard or simulators.
2. Implementation of Combinational Digital/Boolean Circuits: Adder, Subtractor, Multiplication Module, Division Module, Multiplexer, Demultiplexer, Encoder, Decoder.
3. Implementation of Sequential Circuits: Counters, Linear Feedback Shift Registers (LFSR)
4. C/C++ programming to understand the formats of char, int, float, double, long etc.
5. Machine language programming on x86 or higher version kits or simulators:
    - Add/subtract/multiplication/division/GCD/LCM
    - Accessing some specific memory locations/ports
    - Counting odd and even integers from a series of memory locations
    - Printing values of selected registers
    - Handing interrupts

Books Recommended:

[1] Computer System Architecture- M. Morris Mano- Pearson Education.
[2] Computer Organization, 5th Ed., C. Hamacher, Z. Vranesic, S. Zaky, McGraw Hill International Edition 2002.
[3] Computer Organization and Design, 5th Ed., David A. Patterson, John L. Hennessy, The hardware/software interface, Morgan Kaufmann Publisher, 2014.
[4] Patterson & Hennessy, Computer Organization and Design, Morgan Kaufmann Publisher, 2007.
[5] Computer Architecture and Parallel Processing, Kai Hwang, Faye A. Briggs, McGraw Hill Education, 2012.

CO-PO-PSO Relationship:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
3RBPC2.CO1	3	2	-	-	-	-	-	-	-	-	-	3	2	1
3RBPC2.CO2	3	3	2	-	-	-	-	-	-	-	-	3	3	2
3RBPC2.CO3	3	2	2	-	2	-	-	-	-	-	-	3	3	3
3RBPC2.CO4	3	3	3	-	-	-	-	-	-	-	-	2	3	3
3RBPC2.CO5	3	3	3	1	3	-	-	-	-	-	-	2	2	3

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Devi Ahilya Vishwavidyalaya, Indore, India Institute of Engineering and Technology			**II Year B.Tech. (Computer Science and Business Systems) III Sem**			
Course Code & Name	**Instructions Hours per Semester and Credits**					
3RBPC3: Object Oriented Programming	**Classroom Instruction (CI)**		**Lab Instruction (LI)**	**Term Work (TW) and Self Learning (SL)**	**Total no. of Hours Per Semester**	**Total Credits (Total Hours/30)**
	L	**T**	**P**	**TW+SL**	**120**	**4**
	20	**10**	**20**	**70**		

Course Learning Objectives:

- To introduce students to ideas and techniques from programming concept are widely used in Computer Science.
- To understand the concepts of Object-Oriented Programming.
- To analyze the public, protected, and private modes of inheriting classes.
- To demonstrate the overloading of functions and operators to grant them a different meaning.

Prerequisites: Nil

COURSE CONTENTS

Unit-I

Overview of C: Procedural and non-procedural programming, Operator and expressions, Scope and Lifetime, Constants, Pointers, Arrays and references, Control Flow, Functions and program structure, Namespaces, Error Handling, Input and output (C-way), Library Functions (string, math, stdlib), command line arguments, Pre-processor directive.

CO Mapped: CO1

Unit-II

Programming in C++: Libraries, Header files, Basic data types, Functions, Conditional statement and loops, structure and pointers, Control statements, Function Parameter passing, virtual functions, Function overloading and overriding, Exception Handling.

CO Mapped: CO2

Unit-III

The Fundamental of Object Oriented Programming: Necessary for OOP, Data Hiding, Data Abstraction, Encapsulation, Procedural Abstraction, Class and Object.

More Extensions to C in C++ to provide OOP facilities: Scope of class and Scope Resolution operator, Member Function of a class, private, protected and public Access specifier, this keyword, Constructor and Deconstructor, friend class, error handling(exception) .

CO Mapped: CO3

Unit-IV

Essentials of Object Oriented Programming: Operator overloading, Inheritance-Single, Multiple, Class Hierarchy, Pointers to object, Assignment of an object to another object, Polymorphism, through dynamic binding, virtual Functions, overloading, overriding and hiding, Error Handling.

CO Mapped: CO4

Unit-V

Generic Programming: Template concept, class template, function template, template specialization.
Input and output: Streams, Files, library functions, formatted output.

CO Mapped: CO5

Course Outcomes (CO):

CO. No.	CO
CO1	Understand the fundamental concepts of C programming including procedural and object-oriented approaches, operators, expressions and control flow.
CO2	Understand the concepts of C++ including the structure of program control statements, function parameter passing, Function overloading, overriding and exception handling
CO3	Apply object oriented programing principles such as data abstraction, encapsulation, inheritance, polymorphism, and dynamic binding to solve real-world problems.
CO4	Demonstrate the use of constructors, deconstructors, scope resolution, access specifiers and error handling in designing efficient C++ programs.
CO5	Implement generic programing using templates (class, function, specialization) and manage input/output operations with streams, files and formatted outputs.

Books Recommended:

[1] The C++ Programming language, Bjarne styroustrup, Addision Wesely.
[2] C++ and object oriented programming Paradigm Debasish Jana, PHI Learning PVT.LTD.

CO-PO-PSO Relationship:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
3RBPC3.CO1	3	3	2	2	3							3	3	1
3RBPC3.CO2	3	3	2	2	3							3	3	1
3RBPC3.CO3	3	3	2	2	3							3	3	1
3RBPC3.CO4	3	3	2	2	3							3	3	1
3RBPC3.CO5	3	3	2	2	3							3	3	1

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<tr><td>Course Code & Name</td><td colspan="6">Instructions Hours per Semester and Credits</td></tr>
<tr><td rowspan="3">3RBPC4:
Data Base Management Systems</td><td colspan="2">Classroom Instruction (CI)</td><td>Lab Instruction (LI)</td><td>Term Work (TW) and Self Learning (SL)</td><td>Total no. of Hours Per Semester</td><td>Total Credits (Total Hours/30)</td></tr>
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Course Learning Objectives:

- To understand the dissimilar issues concerned in the intend and implementation of a database system.
- To learn the physical and logical database design, database modeling, relational, hierarchical, and network models.
- To understand and develop data manipulation language to query, modernize, and manage a database
- To intend and build a straightforward database system and show competence with the fundamental
- Tasks involved with modelling, designing, and implementing a DBMS

Prerequisites: Basic computer literacy, understanding of data structures, and familiarity with a programming language like C, C++, Java, or Python.

COURSE CONTENTS

Unit I

Introduction: Introduction to Database. Hierarchical, Network and Relational Models. Database system architecture: Data Abstraction, Data Independence, Data Definition Language (DDL), Data Manipulation Language (DML).

CO Mapped: CO1

Unit II

Data models: Entity-relationship model, network model, relational and object-oriented data models, integrity constraints, data manipulation operations. Relational query languages: Relational algebra, Tuple and domain relational calculus, SQL3, DDL and DML constructs, Open source and Commercial DBMS - MYSQL, ORACLE, DB2, SQL server.

CO Mapped: CO2

Unit III

Relational database design: Domain and data dependency, Armstrong's axioms, Functional Dependencies, Normal forms, Dependency preservation, Lossless design. Query processing and optimization: Evaluation of relational algebra expressions, Query equivalence, Join strategies, Query optimization algorithms.

CO Mapped: CO3

Unit IV

Storage strategies: Indices, B-trees, Hashing. Transaction processing: Concurrency control, ACID property, Serializability of scheduling, Locking and timestamp based schedulers, Multi- version and optimistic Concurrency Control schemes, Database recovery.

CO Mapped: CO4

Unit V

Database Security: Authentication, Authorization and access control, DAC, MAC and RBAC models, Intrusion detection, SQL injection. Advanced topics: Object oriented and object relational databases, Logical databases, Web databases, Distributed databases, Data warehousing and data mining.

CO Mapped: CO5

Course Outcomes (CO):

CO. No.	CO
CO1	Explain fundamental concepts of databases, data models, and DBMS architecture.
CO2	Apply ER modeling, relational algebra/calculus, SQL, and use DBMS tools.
CO3	Normalize relational schemas using functional dependencies and Armstrong's axioms; analyze query optimization.
CO4	Evaluate query processing strategies, indexing, hashing, and transaction management with concurrency and recovery
CO5	Demonstrate database security mechanisms and explore advanced DB concepts.

Books Recommended:

[1] Database System Concepts – Abraham Silberschatz, Henry F. Korth, S. Sudarshan *(*McGraw-Hill, 7th Edition*)*
[2] Fundamentals of Database Systems – Ramez Elmasri, Shamkant B. Navathe *(*Pearson, 7th Edition*)*
[3] Database Management Systems – Raghu Ramakrishnan, Johannes Gehrke *(*McGraw-Hill, 3rd Edition)

CO-PO-PSO Relationship:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9-	PO10	PO11	PSO1	PSO2	PSO3
3RBPC4.CO1	3	2	1	1	1	-	-	-	-	-	-	3	2	1
3RBPC4.CO2	3	3	2	2	2	-	-	-	-	-	-	3	2	1
3RBPC4.CO3	3	3	2	2	1	-	-	-	-	-	-	3	3	1
3RBPC4.CO4	3	2	2	3	2	-	-	-	-	-	-	3	2	1
3RBPC4.CO5	2	2	2	2	2	-	-	-	-	-	-	3	2	1

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Devi Ahilya Vishwavidyalaya, Indore, India Institute of Engineering and Technology				**II Year B.Tech. (Computer Science and Business Systems) III Sem**		
Course Code & Name	**Instructions Hours per Semester and Credits**					
3RBPC5: Artificial Intelligence	**Classroom Instruction (CI)**		**Lab Instruction (LI)**	**Term Work (TW) and Self Learning (SL)**	**Total no. of Hours Per Semester**	**Total Credits (Total Hours/30)**
	L	**T**	**P**	**TW+SL**	**120**	**4**
	20	**10**	**20**	**70**		

Course Learning Objectives:

- To impart knowledge about Artificial Intelligence.
- To give understanding of the main abstractions and reasoning for intelligent systems.
- To enable the students to understand the basic principles of Artificial Intelligence in various applications.

Prerequisites: Nil

COURSE CONTENTS

Unit-I

Introduction: Introduction to AI-Problem formulation, Problem Definition -Production systems, Control strategies, Search strategies. Problem characteristics, Production system characteristics Problem solving methods – Defining the problem as state space search, Problem graphs, Matching, Indexing and Heuristic functions.

CO Mapped: CO1

Unit-II

Search Techniques: Hill Climbing-Depth first and Breath first, heuristic search strategies-Bestfirst search, A*, AO* search, Constraints satisfaction, Means end analysis, simulated annealing, etc. Measure of performance and analysis of search algorithms. Adversarial search –Minimax search procedure, alpha-beta pruning, iterative deepening, genetic algorithms - Related algorithms, etc.

CO Mapped: CO2

Unit-III

Representation of Knowledge: Game playing - Knowledge representation, Knowledge representation using Predicate logic, Introduction to predicate calculus, Resolution, Use of predicate calculus, Knowledge representation using other logic-Structured representation of

knowledge. Knowledge representation -Production based system, Frame based system, Scripts, CD, Ontologies, Sementic web and RDF.

CO Mapped: CO3

Unit-IV

Knowledge Inference and Planning: Inference – Backward chaining, forward chaining, Rule value approach, uncertain knowledge and reasoning: Probabilistic reasoning, Bayesian networks, Fuzzy logic and reasoning, Theory-Bayesian Network-Dempster - Shafer theory. Planning overview, components of planning system, Goal stack planning, Hierarchal planning, and other planning techniques.

CO Mapped: CO4

Unit-V

Machine Learning and Expert Systems: Overview of different forms of learning, Statistical methods, Learning Decision Trees, Neural Networks, Clustering- basic agglomerative, divisive algorithm based on similarity/dissimilarity measures. Introduction to Natural Language Processing. Architecture of expert systems, Roles of expert systems - Knowledge Acquisition –Meta knowledge. Typical expert systems - MYCIN, DART, XOON, Expert systems shells. Basic knowledge of Prolog programming language.

CO Mapped: CO5

Course Outcomes (CO):

CO. No.	CO
CO1	Describe various characteristics of Intelligent Agents.
CO2	Apply difficult real-life problems in a state space representation to solve them using AI techniques like searching and game playing
CO3	Examine AI problems as Constraint Satisfaction Problems.
CO4	Justify the scope of Uncertainty in AI problem Solving and its applications
CO5	Examine the issues involved in knowledge bases, reasoning systems and planning
CO6	Apply knowledge to synthesize efficient algorithms in common engineering design situations
CO7	Design and evaluate intelligent Expert System
CO8	Understand the fundamental concepts of neural network, Genetic algorithms

Books Recommended:

[1] Kevin Night and Elaine Rich, Nair B., “Artificial Intelligence (SIE)”, Mc Graw Hill2008.

[2] Stuart Russel and Peter Norvig "AI – A Modern Approach", 2nd Edition, Pearson Education 2007 Peter Jackson, "Introduction to Expert Systems", 3 rd Edition, Pearson Education, 2007.
[3] Dan W. Patterson, "Introduction to AI and ES", Pearson Education, 2007. (Unit-III).
[4] http://nptel.ac.in.
[5] Carl Townsend, "Introduction to Turbo PROLOG", BPB Publication.
[6] Ivan Bratko,"Prolog Programming for Artificial Intelligence", 3rd Edition, Pearson Education.

CO-PO-PSO Relationship:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
3RBPC5.CO1	3	3	3	-	-	-	-	-	-	-	-	-	-	-
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3RBPC5.CO3	2	3	3	-	-	-	-	-	-	-	-	-	-	-
3RBPC5.CO4	-	3	3	3	-	-	-	-	-	-	-	-	-	-
3RBPC5.CO5	-	2	2	3	-	-	-	-	-	-	-	-	-	-
3RBPC5.CO6	-	-	-	-	3	3	-	-	3	-	-	-	-	-
3RBPC5.CO7	-	-	-	-	-	3	-	-	3	-	2	-	-	-
3RBPC5.CO8	3	2	3	-	-	-	-	-	-	-	-	-	-	-

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<tr><td rowspan="3">3RBHS1: Indian Constitution and Information Technology Act</td><td colspan="2">Classroom Instruction (CI)</td><td>Lab Instruction (LI)</td><td>Term Work (TW) and Self Learning (SL)</td><td>Total no. of Hours Per Semester</td><td>Total Credits (Total Hours/30)</td></tr>
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Course Learning Objectives:

- To impart a comprehensive understanding of the Indian Constitution and to acquaint students with the cardinal features of the Constitution.
- To elucidate the structure, composition, and functioning of the principal organs of the state.
- To critically examine the regime of Fundamental Rights, Directive Principles of State Policy, and Fundamental Duties.
- To understand the concept of information technology and cyberspace.
- To examine the interface of information technology and law.

Prerequisites: Basic knowledge of the system of governance, polity and cyberspace in India.

COURSE CONTENTS

Unit I:

The Preamble of the Constitution; Essential Features of the Constitution; The Union and its Territory; Citizenship; Theory of Basic Structure; Judicial Activism; Public Interest Litigation (PIL)

CO Mapped: CO1

Unit II:

Fundamental Rights: Right to Equality; Right to Freedom; Protection of Life and Personal Liberty; Right to Education; Right against Exploitation; Right to Freedom of Religion; Right to Constitutional Remedies; Right to Property; Other Fundamental Rights; Fundamental Duties

CO Mapped: CO2

Unit III:

Directive Principles of State Policy; Relations between the Union and the States; The Legislature, the Executive and the Judiciary; Elections; Emergency; Amendment of the Constitution

CO Mapped: CO3

Unit IV:

Purpose and Objective of Information Technology Act, 2000; Definitions under the Act (Information, Computer, Computer Network, Computer Resource, Computer System etc.); Legal Recognition and Authentication of Electronic Records, Digital Signatures and Electronic Signatures.

CO Mapped: CO4

Unit V:

Cybercrimes: Tampering with computer source code, Identity Theft, Cheating by Personation, Cyber Stalking, Cyber Terrorism etc; Cyber Security; Criminal liability under the Information Technology Act, 2000

CO Mapped: CO5

Course Outcomes (CO):

CO. No.	CO
CO1	**Understand the Historical Context:** To provide students with an understanding of the historical background leading to the framing of the Indian Constitution, including the freedom struggle and key constitutional developments during British rule.
CO2	**Familiarize with the Constitutional Framework:** To introduce the structure, features, and philosophy of the Indian Constitution, including concepts such as sovereignty, secularism, democracy, and federalism.
CO3	**Explore Fundamental Rights and Duties:** To examine the nature, scope, and importance of Fundamental Rights, Directive Principles of State Policy, and Fundamental Duties enshrined in the Constitution.
CO4	**Understand the Structure of Government:** To explain the composition, powers, and functions of the Legislature, Executive, and Judiciary at the Union and State levels.
CO5	**Develop Knowledge of Key Constitutional Provisions:** To analyze major constitutional provisions such as emergency powers, amendment procedures, and distribution of powers between the Centre and States.

Books Recommended:

[1] 'Indian Polity' by Laxmikanth 5th Edition, McGraw Hill.
[2] 'Introduction to Indian Constitution' by D.D. Basu, 21st Edition, LexisNexis Publisher.
[3] Indian Constitution by Subhash C. Kashyap, 5th Edition, Vision Books Publisher.

[4] The Constitution of India: A Contextual Analysis- Arun K. Thiruvengadam, 1st Edition, Bloomsbury Academic also referenced as Bloomsbury Publishing).
[5] Working a Democratic Constitution: A History of the Indian Experience- Granville Austin,
[6] 1st Edition (2003); Oxford University Press
[7] Indian Constitutional Law- M.P. Jain,9th Edition, LexisNexis.
[8] Mali, Prashant (2015), Cyber Law and Cyber Crimes, 2nd Edition.
[9] J N Barowali, Abhishek Barowalia (2022), Commentary on Information Technology Act, 1st Edition.
[10] Gupta, Apar (2016), Commentary on Information Technology Act, 3rd Edition.

CO-PO-PSO Relationship:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
3RBHS1.CO1	-	-	1	-	-	2	3	2	3	2	-	1	1	2
3RBHS1.CO2	-	-	2	-	-	2	1	2	3	2	-	2	2	3
3RBHS1.CO3	-	-	2	-	-	1	1	2	2	3	-	1	1	2
3RBHS1.CO4	-	-	1	-	-	1	-	-	2	1	-	2	2	3
3RBHS1.CO5	-	-	1	-	-	1	-	-	1	1	-	1	1	3

- *CO (Rows) mention Nil / Very Small / Insignificant Contribution to the PO (Column)
- 1: Relevant and Small Significant 2: Medium or Moderate and 3: Strong