IPS Academy, Institute of Engineering & Science

(A UGC Autonomous Institute, Affiliated to RGPV, Bhopal)
Scheme Based on AICTE Flexible Curriculum

Department of Computer Science &Information Technology

Bachelor of Technology (B.Tech.)

V Semester

Scheme

Sr. No.	Course Type	Course Code	Course Name	Teaching Scheme			Credits
				L	T	P	
1.	PCC	CI07	Database Management System	2	1	-	3
2.	PCC	CI08	Operating System	2	1	-	3
3.	PCC	CI09	Formal Languages and Automata	3	-	-	3
4.	PCC	CI10	Software Engineering and Project Management	3	-	-	3
5.	HSMC	HS05	Humanities and Social Sciences Open Courses – I	2	-	-	2
6.	IFC	CB01	Interdisciplinary Foundation Course-II	2	-	-	2
7.	LC	CI07(P)	Database Management System Lab	-	-	4	2
8.	LC	CI08(P)	Operating System Lab	-	-	2	1
9.	SBC	CI03(P)	Basics of Web Development	-	-	2	1
10.	PROJ	CI01	Mini Project	-	-	4	2
11.	PROJ	CI02	Seminar	-	-	2	1
12.	MLC	MLC03	Environmental Studies	*1	-	-	Audit
13.	PROJ	-	Internship-I	Credit to be added in sixth semester			
Total Academic Engagement and Credits				14	2	14	23
				30			

Note:

- **Humanities and Social Sciences Open Courses (HSMC) – I,HS05 (Any One Course)**
  (a) English Language Proficiency
  (b) German Language
  (c) French Language
  (d) Japanese Language
  (e) Soft Skills and Interpersonal Communication

- **Interdisciplinary Foundation Course-II, IFC-CB01**

(Offered by Cyber Security IOT including Blockchain Technology Branch.)

- Blockchain Technology

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PCC-CI07	Database Management System	2L:1T	3 credits

Course Objective:

The main objective of this course is to understand ER modeling, SQL, normalization, and transaction management for proficient database design and administration.

Course Contents:

Module 1: **(06 hrs.)**

Introduction to DBMS, File system vs DBMS, Advantages of database systems, Database System architecture, Data models, Schemas and instances, Data independence, Functions of DBA and designer, Design Issues, Entity-Relationship model:Basic Concepts, Design Process, ER diagrams, weak entity sets, extended E-R features –generalization, specialization and aggregation

Module 2: **(08 hrs.)**

Structure of relational databases, Domains, Relations, Relation algebra – fundamental operators and syntax, relational algebra queries, Types of relational calculus i.e. Tuple oriented and domain oriented relational calculus and its operations, Integrity constraints, Key Concept: Super Key, Candidate Key, Primary Key, Alternate Key, Foreign Key

Module 3: **(14 hrs.)**

SQL concepts : Introduction to data definition language, data manipulation, data control and transaction control language, Basic queries, Aggregation and Grouping, Data Modification Commands, Joins and subqueries, Constraints and views in SQL, Cursor Management, Data storage and definitions, Query Processing & Query Optimization, Transformation of relational expressions. Case Study of ORACLE and DB2.

Module 4: **(09 hrs.)**

Functional Dependency –definition, types of FD, Armstrong's axioms/Properties of FD, closure of FD set, closure of attributes, irreducible set of FD, Canonical cover, Normalization – Need of Normalization, 1NF, 2NF, 3NF, Decomposition using FD- dependency preservation, lossless join, BCNF, Multi-valued dependency, 4NF, Join dependency and 5NF.

Module 5: **(08 hrs.)**

Introduction of transaction: ACID properties, States of Transaction, transaction processing and recovery, Concurrency control: Lock Management, specialized locking techniques, concurrency control without locking, Protection and Security, Introduction to Distributed Databases, Basic Concepts of Object Oriented database system.

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Course Outcomes

1. Describe basic concepts of DBMS and Explain ER model.
2. Solve queries using Relational Algebra and Relational Calculus.
3. Analyze and renovate to use a DDL,DML, Data Retrieval Query and discuss the Query optimization methods.
4. Understanding of Functional Dependencies, Normalization theory and applying knowledge to the design of a database.
5. Explain Terms Like Transaction Processing, concurrency control and distributed database.

List of Text/Reference Books:

1. Date CJ,"An Introduction to Database System",PearsonEducations,8th Edition,2003.
2. Korth,Silbertz, Sudarshan,"Fundamentals of Database System",McGrawHill,5th Edition,2006.
3. PeterRob," DataBase System: Design Implementation &Management",Cengage Learning 4th Edition,2000.
4. Elmasri, Navathe, "Fundamentals of Database Systems", PearsonEducations,7th Edition2017.
5. Atul Kahate ," Introduction to Database Management System", PearsonEducations,2004.
6. Oracle9i Database Administration Fundamental-I,VolumeI,OraclePress,TMH.
7. Paneerselvam,"DataBaseManagementSystem",PHILearning,3rd Edition,2018.
8. J.D.Ullman,"PrinciplesofDatabaseandKnowledge–BaseSystems",ComputerScience Press,2nd Edition 1988.
9. Serge Abiteboul, RichardHull,VictorVianu,"FoundationsofDatabases",Addison-Wesley,1995.

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V-Semester

PCC-CI08	Operating System	2L:1T	3 credits

Prerequisites: Computer Architecture, Data Structures & Algorithms, C/C++ programming.

Course Objective:

To equip students with a comprehensive understanding of the fundamental concepts and mechanisms in operating systems, focusing on process management, memory management, and file systems.

Course Contents: (40 hrs.)

Module 1 **(10 hrs.)**

Process Management: Introduction to Operating Systems, Process, PCB and Attributes, Process States and Multiprogramming, Process State Transition Diagram and Various Schedulers, Process Queues, CPU Scheduling, FCFS, Convoy Effect, FCFS with Overhead, SJF, SRTF, Round Robin Algorithm, Longest Job First, Longest Remaining Time First, HRRN, Priority Scheduling, Non-Pre-emptive Priority Scheduling, Pre-emptive Priority Scheduling, SRTF with Processes Containing CPU and IO Time, Pre-emptive Priority with Processes Containing CPU and IO Time, Multi-Level Queues and Multi Level Feedback Queues.

Module 2 **(10 hrs.)**

Synchronization: Introduction to Synchronization Mechanisms, Lock Variables, TSL, Disabling Interrupts, Turn Variable or Strict Alteration Method, Interested Variable, Peterson's Solution, Synchronization Mechanisms Without Busy Waiting, Sleep and Wake, Introduction to Semaphores, Counting Semaphores, Binary Semaphores or Mutexes, Dining Philosophers Problem, Deadlocks: Introduction to Deadlocks, Necessary Condition for Deadlock, Deadlock Handling Mechanisms, Deadlock Prevention, Safe, Unsafe, Deadlock Avoidance, and Banker's Algorithm, Resource Allocation Graph, Deadlock Detection and Recovery.

Module 3 **(10 hrs.)**

Memory Management: Multiprogramming and Memory Management, Object code, Relocation, and Linker, Loader, Fixed Partitioning, Relocation and Protection in Contiguous Memory Allocation, Dynamic Partitioning, Bit Map for Dynamic Partitioning, Linked List for Dynamic Partitioning, First fit, Next fit, Best fit, Worst fit, Variable Partitioning, Overlays, Paging, Physical Address Space and Logical Address Space, Page Table, Page Table Entry, Multi-Level Paging, VM Introduction, TLB, Page fault, Inverted page table, Frame allocation and page replacement, Page replacement algorithm, Belady's Anomaly, Stack algorithms, Segmentation, Segmented Paging.

Module 4 **(05 hrs.)**

File system IO and protection: Attributes and operations on files, Open file tables, Accessing files, Directory structure, Single level VS Two level directory, Tree structured directory, Acyclic Graph structured directory, File systems, File system structure, MBR, On disk data structure uses in file system implication, In memory data structure in file system implementation, Directory implementation, Allocation methods, File allocation table, Indexed allocation, Free space management, Disk scheduling (FCFS, SSTF, Scan, C-scan, Look, C-look).

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Module 5 **(05 hrs.)**

Threads and system calls: System calls Vs function calls, Process control system calls, File related system calls, Device related system calls, Information related system calls, Communications related system calls, Fork System call, Process Vs Threads, User level Vs Kernel level threads, Hybrid threads, Introduction to Network, Distributed and Multiprocessor Operating Systems, Case Studies: Unix/Linux, Windows and other Contemporary Operating Systems.

Course Outcomes

1. Master process management and CPU scheduling for efficient resource utilization.
2. Implement synchronization mechanisms to prevent concurrency problems and deadlocks.
3. Optimize memory usage through paging, virtual memory, and page replacement algorithms.
4. Design and manage efficient file systems for data storage and retrieval.
5.Understand system calls, threads, and advanced OS concepts in network, distributed, and multiprocessor environments.

List of Text / Reference Books

1.Operating System Concepts Essentials by Avi Silberschatz, Peter Galvin, and Greg Gagne (10th Edition, 2018).
2. Modern Operating Systems by Andrew S. Tanenbaum (3rd Edition, 2007).
3. Understanding the Linux Kernel by Daniel P. Bovet and Marco Cesati (3rd Edition).
4. William Stallings' Operating Systems: Internals and Design Principles (5th Edition, 2005).
5. Operating Systems: A Modern Perspective by Gary J. Nutt (2 nd Edition)

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V-Semester

PCC-CI09	Formal Language and Automata	3L	3 credits

Prerequisite: Discrete structure

Course Objective:
The main objective of this course is to unders and fundamental of formal languages and automata.

Course Contents:(40hrs.)

Module 1: **(08 hrs.)**
Introduction of the theory of computation, Finite state automata – description of finite automata, properties of transition functions, Transition graph, designing finite automata, FSM, DFA, NFA, 2-way finite automata, equivalence of NFA and DFA, Mealy and Moore machines.

Module 2: **(08 hrs.)**
Regular grammars, regular expressions, regular sets, closure properties of regular grammars, Arden's theorem, Myhill-Nerode theorem, pumping lemma for regular languages, Application of pumping lemma, applications of finite automata, minimization of FSA.

Module3: **(08 hrs.)**
Introduction of Context-Free Grammar - derivation trees, ambiguity, simplification of CFGs, normal forms of CFGs- Chomsky Normal Form and Greibach Normal forms, pumping lemma for CFLs, decision algorithms for CFGs, designing CFGs, Closure properties of CFL's.

Module 4: **(08 hrs.)**
Introduction of PDA, formal definition, closure property of PDA, examples of PDA, Deterministic Pushdown Automata, NPDA, conversion PDA to CFG, conversion CFG to PDA.

Module 5: **(08 hrs.)**
Turing machines - basics and formal definition, language acceptability by TM, examples of TM, variants of TMs – multitape TM, NDTM, Universal Turing Machine, offline TMs, equivalence of single tape and multitape TMs. Recursive and recursively enumerable languages, decidable and undecidable problems – examples, halting problem, reducibility. Introduction of P, NP, NP complete, NP hard problems and Examples of these problems.

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Course Outcomes

1. Convert between finite automata, regular grammars, and regular expression representations of regular languages
2. Convertbetweengrammarsandpush-downautomataforcontext-freelanguages
3. Translate a context-free grammar from one form to another
4. Understand Pushdown automata
5. List examples of un-decidable problems

List of Text/ Reference Books:

1. DanielI.A.Cohen,"IntroductiontoComputerTheory",WileyIndia,2nd Edition,2003.
2. John E Hopcroft, Jeffrey D. Ullman and Rajeev Motwani, "Introduction to Automata Theory, Languages and Computation", Pearson Education, 2nd Edition,2001.
3. K.L.P Mishra & N. Chandrasekaran,"Theory of Computer Science", PHI Learning, 3rd Edition,2006.
4. Peter Linz, "Introduction to Automata Theory and Formal Languages", Narosa Publishing. 3rd Edition,2007.
5. John C Martin, "Introduction to languages and the theory of computation", TATA McGraw Hill, 3rd Edition 2013.
6. HarryR. Lewisand ChristosH.Papadimitriou, "Elementsofthe TheoryofComputation", Pearson Education Asia,2nd edition, 1998.
7. DexterC.Kozen,"AutomataandComputability",UndergraduateTextsinComputerScience, Springer,1st edition,2012.
8. MichaelSipser,"IntroductiontotheTheoryofComputation",PWSPublishing.,3rdedition,2012.

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PCC-CI10	**Software Engineering & Project Management**	**3L**	**3 credits**

Course Objective:

The course aims are to develop a broad understanding of the discipline of software engineering and management of software systems.

Course Contents:(45 hrs.)

Module 1: **(08 hrs.)**

Introduction, Software problem and prospects , software process ,Software process models: Linear Sequential model, Prototyping Model, RAD Model, Evolutionary Process Models like Incremental Model, Spiral Model, the unified process, Open source software development, Agile processes.

Module 2: **(08 hrs.)**

Measures, Metrics and Indicators, Metrics in the Process and Project Domains, Software Measurement, Metrics of Software Quality, S/W reliability, Software estimation techniques, loc and FP estimation. Empirical models like COCOMO.

Module 3: **(10 hrs.)**

Software requirements and specification: feasibility study, Informal/formal specifications, pre/post conditions, algebraic specification and requirement analysis models, Specification design tools. Software design and implementation: Software design objectives, design techniques, User interface design, cohesion and coupling, Functional decomposition, Data flow diagram, Object- oriented design: UML diagrams.

Module 4: **(09 hrs.)**

Coding standard and guidelines, programming style, code sharing, code review, software components, rapid prototyping, specialization, construction, class extensions, intelligent software agents, reuse performance improvement, debugging. Software Testing Strategies: Verification and Validation, Strategic Issues, test plan, white box, black-box testing, unit and integration testing, system testing test case design and acceptance testing.

Module 5: **(10 hrs.)**

Organizing: Alternatives for project managers, matrix organization, Staffing, Directing: leadership, delegation, motivation, Controlling risk analysis and RMMM plan, project scheduling and tracking plan, SQA and quality planning, SCM activities and plan, project management plan. Re-engineering, reverse engineering, forward engineering, web engineering, Software project management standards.

1. Apply project management concepts and techniques to an IT project.
2. Identify issues that could lead to IT project success or failure.
3. Explain project management in terms of the software development process.
4. Describe the responsibilities of IT project managers.
5. Apply project management concepts through working in a group as team leader or active team member on an IT project.

List of Text/Reference Books:

1. Schwalbe,Kathy"InformationTechnologyProjectManagement"8th Edition,2016.
2. P,S.Pressman"SoftwareEngineering.APractitioner'sApproach"Newedition,McGrawHills,7th editio n,2010/
3. KieronConway"Softwareproject Management fromconceptto development BlackBook" Dreamtech Press.
4. DeepakJain,"SoftwareEngineeringprincipleandpractices"OxfordUniversityPress,2008.
5. BellDouglas"SoftwareEngineeringforstudents",PearsonEducation.,4th Edition,2005.
6. Kelkar"SoftwareProjectManagement,"PHILearning,3rd edition2012.

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V-Semester

LC-CI07(P)	Database Management System Lab	4P	2 credits

Course Objective:

The main objective of this course is to understand ER modeling, SQL, normalization, and transaction management for proficient database design and administration.

Course Content

Module 1: **(06 hrs.)**

Entity-Relationship Diagrams: Modeling Hospital Management System. Entities, Relationships, and Attributes.Cardinalities and Diagram Representation.

Module 2: **(06 hrs.)**

SQL Introduction and DDL Commands: Overview of SQL.Data Definition Language (DDL) Commands.Constraints and Schema Design.

Module 3: **(06 hrs.)**

Data Manipulation Language (DML) and Query Construction: INSERT, UPDATE, DELETE Statements. Constructing SELECT Queries. Clauses: WHERE, ORDER BY, GROUP BY, HAVING, LIKE, IN, BETWEEN etc.

Module 4: **(06 hrs.)**

Joins, Subqueries, and Views: Join Operations on Tables. Sub queries for Nested Queries. Creating and Utilizing Views.

Module 5: **(06 hrs.)**

Transactional Control and Data Control Language: Transactional Control Language (T.C.L) commands. Data Control Language (D.C.L) Commands. Managing Access Permissions and Security.

List of Experiments:

1. Design any Database system (like Banking, University etc).
2. Introduction to Oracle and SQL
3. Write the queries for Data Definition language(DDL)
4. Write the queries for Data manipulation language(DML)
5. Use of various types of Integrity Constraints
6. Write the queries for Data Control language(DCL)
7. Use of SELECT command with different clauses.
8. Write SQL queries using logical operation(AND,OR,NOT)
9. Write SQL queries for aggregate functions(Max, Min, Sum, Avg, Count)
10. Write SQL queries for group by and Having
11. Write SQL queries for sub queries and nested queries
12. Write an SQL query to implement JOINS
13. Write SQL queries to create views
14. Implementation of any Database system (like Banking, University etc).

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Course Outcome:

1. Demonstrate high-level competence in constructing Entity-Relationship Diagrams for efficient database design.
2. Understand SQL basics and DDL commands for effective database control.
3. Achieve efficiency in Data Manipulation Language (DML) and SQL queries for data retrieval.
4. Develop expertise in joins, subqueries, and views for intricate data interactions.
5. Understand T.C.L and D.C.L for efficient database management.

List of Text/Reference Books:

1. DateCJ,"AnIntroductiontoDatabaseSystem",PearsonEducations,8th Edition,2003.
2. Korth,Silbertz, Sudarshan,"Fundamentals of Database System",McGrawHill,5th Edition,2006.
3. PeterRob,"DataBaseSystem:DesignImplementation&Management",Cengage Learning 4th Edition,2000.

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LC-CI08(P)	**Operating System Lab**	**4P**	**2 credits**

Course Objective

To equip students with a comprehensive understanding of the fundamental concepts and mechanisms in operating systems, focusing on process management, memory management, and file systems.

Course Contents

Module 1 **(06 hrs.)**

Process Management: CPU Scheduling, FCFS, Convoy Effect, FCFS with Overhead, SJF, SRTF, Round Robin Algorithm, Longest Job First, Priority Scheduling.

Module 2 **(06 hrs.)**

Synchronization: Producer Consumer, Reader Writers, Dining Philosophers Problem, Banker's algorithms.

Module 3 **(06 hrs.)**

Memory Management: Page replacement algorithm, Belady's Anomaly, Stack algorithms.

Module 4 **(05 hrs.)**

File system IO: Disk scheduling (FCFS, SSTF, Scan, C-scan, Look, C-look).

Module 5 **(05 hrs.)**

Threads and system calls: Communications related system calls.

List of Experiments

1. To implement FCFS CPU scheduling algorithm.
2. To implement SJF CPU scheduling algorithm.
3. To implement Priority CPU Scheduling algorithm.
4. To implement Round Robin CPU scheduling algorithm.
5. To compare various CPU Scheduling Algorithms over different Scheduling Criteria.
6. To implement classical, inter process communication problem (producer consumer).
7. To implement classical, inter process communication problem (Reader Writers).
8. To implement classical, inter process communication problem (Dining Philosophers).
9. To implement Banker's algorithms.
10. To implement & compare various page replacement algorithms.
11. To implement & Compare various Disk & Drum scheduling Algorithms.
12. To implement Remote Procedure Call (RPC).

Course Outcomes

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1. Master process management and CPU scheduling for efficient resource utilization.
2. Implement synchronization mechanisms to prevent concurrency problems and deadlocks
3. Optimize memory usage through paging and page replacement algorithms.
4. Design and manage efficient file systems for data storage and retrieval.
5. Understand system calls, threads, and advanced OS concepts in network.

List of Text / Reference Books

1. Operating System Concepts Essentials by Avi Silberschatz, Peter Galvin, and Greg Gagne (10th Edition, 2018).
2. Modern Operating Systems by Andrew S. Tanenbaum (3rd Edition, 2007).
3. Understanding the Linux Kernel by Daniel P. Bovet and Marco Cesati (3rd Edition).
4. William Stallings' Operating Systems: Internals and Design Principles (5th Edition, 2005).
5. Operating Systems: A Modern Perspective by Gary J. Nutt (2nd Edition).

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SBC- CI03(P)	**Basics of Web Development**	**2P**	**1 credits**

Course Objective: This course introduces students to the fundamental concepts and skills necessary to design and create websites. Through a combination of theoretical instruction and hands-on projects, students will learn about the principles of design, HTML, CSS, and basic web development tools.

Course Contents

Module 1: **(06 hrs.)**

Introduction to Web Design, Overview of the web design process, Understanding the role of a web designer, Historical perspective of web design, Current trends and best practices in web design, Current trends and best practices in web design.

Module 2: **(06 hrs.)**

HTML Basics, Introduction to HTML (Hypertext Markup Language), Understanding HTML syntax and structure, Creating a basic HTML document, Working with HTML tags and elements.

Module 3: **(06 hrs.)**

CSS Basics, Introduction to CSS (Cascading Style Sheets), Understanding CSS syntax and selectors, Applying styles to HTML elements, Working with text, colors, and backgrounds in CSS.

Module 4: **(06 hrs.)**

Images and Multimedia, Optimizing images for the web, Incorporating images and multimedia into web pages, Using CSS for image styling and effects, Accessibility considerations for multimedia content.

Module 5: **(06 hrs.)**

Introduction to JavaScript, Basics of JavaScript programming language, Adding interactivity to web pages with JavaScript, Working with DOM (Document Object Model), Introduction to JavaScript libraries/frameworks (optional).

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List of Experiments

1. HTML Basics:

1. Create a simple webpage with headings, paragraphs, and lists.
2. Experiment with different HTML tags and attributes.
3. Embed images and links into your webpage.
4. Create a form with various input types (text, checkbox, radio buttons, etc.).

2. CSS Styling:

5. Apply different styles (colors, fonts, margins, padding) to HTML elements.
6. Experiment with CSS selectors (class, ID, element).
7. Create a navigation menu using CSS.
8. Implement basic layout techniques (floats, positioning, flexbox) to structure your webpage.

3. JavaScript Basics:

9. Create a simple "Hello, World!" script.
10. Use JavaScript to manipulate HTML elements (change text, styles, attributes).
11. Create interactive elements like buttons with event listeners.
12. Implement basic form validation using JavaScript.

4. JavaScript Libraries:

13. Explore JavaScript libraries like jQuery for DOM manipulation and event handling.
14. Use jQuery to simplify common JavaScript tasks and animations.

5. Form Handling:

15. Create a form with different input types (text, password, email).
16. Implement client-side form validation using JavaScript.
17. Experiment with form submission methods (GET vs. POST).

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PROJ- CI01	**Mini Project**	**4P**	**2 credits**

Course Overview:
The mini project is designed to provide hands-on experience in software development, project management, and problem-solving. Students will apply theoretical knowledge to develop a working software prototype.

Module 1: Project Initiation and Planning

- Understand project requirements and objectives.
- Learn project planning and management techniques.
- Develop a project proposal and work breakdown structure (WBS).

Module 2: System Design and Architecture

- Design system architecture and user interface.
- Create system models and diagrams using UML diagrams (use case, class, sequence, activity diagrams).
- Plan the development process.

Module 3: Implementation and Coding

- Implement the system based on the design documents.
- Write and test code in relevant programming languages.
- Develop a functional prototype.

Module 4: Testing and Quality Assurance

- Test the system for defects and issues.
- Ensure the system meets quality standards.
- Prepare for system deployment.

Module 5: Deployment and Presentation

- Deploy the system to a live environment.
- Document the project thoroughly.
- Present the project to an audience.

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Course Outcome:

1. Practical Application of Theoretical Knowledge.
2. Problem-Solving and Critical Thinking.
3. Technical Proficiency and Tool Utilization.
4. Project Management and Teamwork.
5. Innovation and Creativity.

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PROJ- CI02	**Seminar**	**2P**	**1 credits**

Course Objective:

The course objective of a seminar in a B.Tech Computer Science and Information Technology (CS&IT) program typically aims to enhance students' knowledge, skills, and experiences through presentations, discussions, and research.

Module 1: Topic Selection and Research

- Introduction to seminar objectives and expectations.
- Guidance on selecting a relevant and current topic in CS & IT.
- Techniques for conducting effective research, including literature review and data collection.
- Ethical considerations and plagiarism prevention.

Module 2: Content Development

- Structuring a seminar presentation: Introduction, body, conclusion.
- Developing clear and concise content that communicates key points effectively.
- Use of multimedia and visual aids to enhance the presentation.
- Creating supporting documents: abstracts, bibliographies, and handouts.

Module 3: Presentation Skills

- Training in public speaking and communication skills.
- Techniques for engaging the audience and managing questions.
- Practice sessions with peer and instructor feedback.
- Non-verbal communication and body language tips.

Module 4: Technical Tools and Software

- Familiarization with presentation software (e.g., PowerPoint, LaTeX, Prezi).
- Introduction to tools for creating diagrams, charts, and other visuals (e.g., Visio, Lucidchart).
- Tips for effective use of software to support seminar presentations.

Module 5: Evaluation and Feedback

- Criteria for evaluating seminar presentations (content, delivery, visuals, etc.).
- Peer review sessions and constructive feedback methods.
- Self-assessment techniques to identify strengths and areas for improvement.
- Final presentation assessment and reflection on learning outcomes.

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Course Outcome:

1. Improved Communication Skills.
2. Enhanced Research Skills.
3. Up-to-date Knowledge on Emerging Technologies.
4. Teamwork and Collaboration.
5. Critical Thinking and Problem-Solving Abilities.