AICTE ID No. 5435581: DTE Code No. 4123: University Code No. 278
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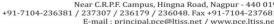--

Course Outcome

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CBCS Scheme

CBCS Scheme (New Scheme) - III Semester

University Course Code	Subjects	Teaching Scheme			Evaluation Scheme			Credits	Category
		L	T	P	CA	UE	Total		
BTECHCSE301T	Applied Mathematics III (TH)	3	1	0	30	70	100	4	BSC
BTECHCSE302T	Object Oriented Programming with Java	3	1	0	30	70	100	4	PCC
BTECHCSE302P	Object Oriented Programming with Java Lab	0	0	2	25	25	50	1	PCC
BTECHCSE303T	Operating System	3	0	0	30	70	100	3	PCC
BTECHCSE303P	Operating System Lab	0	0	2	25	25	50	1	PCC
BTECHCSE304T	Computer Architecture & Digital System	3	1	0	30	70	100	4	PCC
BTECHCSE305T	Ethics in IT	3		0	30	70	100	3	PCC
BTECHCSE306T	Universal Human Values	2	0	0	15	35	50	2	HSMC
BTECHCSE307T	Environment Sciences	2	0	0	-	-	-	-	MCAudit
BTECHCSE308P	Computer Workshop-I Lab	-	-	2	25	25	50	0	PCC
	Total	**19**	**3**	**06**	**240**	**460**	**700**	**23**	

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Semester:- III   Subject:Applied Mathematics-III
Subject Code: BTECH CSE 301T

Course Outcomes:

After completing the course:

Students will able to	
CO1	**Demonstrate** numerical methods,matrices for the solution of linear and nonlinear equations, solution of differential equations among other mathematical processes and activities.
CO2	**Analyze** real world scenarios to recognize when matrices and probability are appropriate, formulate problems about the scenarios, creatively model these scenarios in order to solve the problems using multiple approaches.
CO3	**Learn** to organize,manage and present data in a clear and concise manner.
CO4	**Develop** an ability to identify,formulate,and/or solve real world problems.
CO5	**Determine** the impact of scientific and engineering solutions in a global and societal context.Create the groundwork for post-graduate courses,specialized study,and research in computational mathematics.

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Semester:- III   Subject:- Object Oriented Programming with Java

Subject Code: BTECH CSE 302T

Course Outcomes:

After completing the course:

Students will able to	
CO1	**Identify** classes,objects,members of a class and relationship among them for a specific problem.
CO2	**Demonstrate** the concepts of garbage collection,polymorphism,inheritance etc.
CO3	**Evaluate** the numeric(algebraic) and string-based computation.
CO4	**Implement** modularity as well as basic error handling techniques.Develop,design and implement small multithreaded programs using Java language.
CO5	**Apply** appropriate problem-solving strategies for the implementation of small medium scale java applications.

Semester:- III   Subject:- Object Oriented Programming with Java Lab

Subject Code: BTECH CSE 302P

Course Outcomes:

After completing the course:

Students will able to

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CO1	**Implement** various object oriented concepts through simple programs & applying the concept of classes, Java, JDK Components and develop Simple Java Programs.
CO2	**Develop** Simple Java Programs of string ,inheritance and Exception handling.
CO3	**Demonstrate** Multithreading Programming and Interfaces & Collection Framework.

Semester:- III   Subject:- Operating System   Subject Code: BTECHCSE303T

<u>**Course Outcomes:**</u>

After completing the course:

Students will able to	
CO1	**Discuss** the basic concepts of Operating Systems.
CO2	**Describe** the process management policies and scheduling algorithms.
CO3	**Illustrate** the various memory management techniques.
CO4	**Identify** process synchronization techniques.
CO5	**Summarize** the file system concepts and evaluate deadlock detection & prevention mechanism

Semester:- III   Subject:- Operating System Lab   Subject Code: BTECHCSE303P

<u>**Course Outcomes:**</u>

After completing the course:

Students will able to	
CO1	**Execute** basic Linux commands and simulate Linux commands
CO2	**Implement** various CPU scheduling algorithms
CO3	**Implement** memory management techniques & critical section handling.

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Semester:- III   Subject:- Computer Architecture & Digital System

Subject Code: BTECH CSE 304T

Course Outcomes:

After completing the course:

Students will able to	
CO1	**Discuss** the basic concept of digital system & apply for problem solving.
CO2	**Describe** the Computer Architecture & addressing modes.
CO3	**Demonstrate** the various instruction formats.
CO4	**Evaluate** the arithmetic operations.
CO5	**Compare** the various memory management system,I/O mapped & memory mapped operations.

Semester:- III   Subject:- Ethics in IT   Subject Code: BTECHCSE305T

Course Outcomes:

After completing the course:

Students will able to

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CO1	**Describe** the knowledge about ethical values & principles.
CO2	**Identify** the key issues of privacy protection policies.
CO3	**Interpret** Intellectual Property Rights and related law in reality.
CO4	**Create** the core values that shape the ethical behavior of an engineer/IT Professional.
CO5	**Demonstrate** the multiple ethical interests at stake in a real-world situation & develop cognitive skills in solving social problems.

Semester:- III   **Subject:-Computer Workshop-I**   **Subject Code: BTECHCSE308P**

Course Outcomes:

After completing the course:

Students will able to	
CO1	**Design** the web pages using basic HTML tags
CO2	**Develop** the web pages to include images and frames
CO3	**Design** the web pages to create table and form

CBCS Scheme (New Scheme) – IV Semester

University Course Code	Subjects	Teaching Scheme			Evaluation scheme			Credits	Category
		L	T	P	CA	UE	Total		
BTECHCSE401T	Discrete Mathematics and Graph Theory (TH)	3	1	0	30	70	100	4	BSC
BTECHCSE402T	Data Structure and Program Design (TH)	3	1	0	30	70	100	2	PCC-CS
BTECHCSE402P	Data Structure and Program Design Lab	0	0	2	25	25	50	1	PCC-CS
BTECHCSE403T	Database Management System(TH)	3	0	0	30	70	100	1	PCC-CS
BTECHCSE403P	Database Management SystemLab	0	0	2	25	25	50	3	PCC-CS
BTECHCSE404T	Computer Networks(TH)	3	0	0	30	70	100	1	PCC-CS
BTECHCSE405T	Theory of Computation(TH)	3	1	0	30	70	100	4	PCC-CS
BTECHCSE406T	System Programming(TH)	3	0	0	30	70	100	4	PCC-CS
BTECHCSE407P	Computer Workshop-I Lab	0	0	2	25	25	50	1	PCC-CS
BTECHCSE408	Internship	-	-	-	50	-	50	1	PROJ-CS-Project
	Total	**19**	**03**	**06**	**290**	**460**	**750**	**24**	

PCC–CS Professional Core Courses   **ESC** – Engineering Science Courses   **LC** – Laboratory Course

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OEC–CS Open Elective Courses	**MC** – Mandatory Course	**BSC**–Basic Science Courses
PROJ – CS Project (Min. one month internship is desirable)		**PEC–CS** Professional Elective Courses
HSMC– Humanities and Social Sciences including Management Courses		

Semester:- IV   Subject:- Discrete Mathematics and Graph Theory

Subject Code: BTECHCSE401T

<u>Course Outcomes:</u>

After completing the course:

Students will able to	
CO1	**Determine** graph theory models of data structures and state machines to solve problems of connectivity and constraint satisfaction.
CO2	**Design** mathematical models for engineering are designed,analyzed and implemented in industry and organizations.
CO3	**Identify** basic data types and structures(such as numbers,sets,graphs, and trees)used in computer algorithms and systems:distinguish rigorous definitions and conclusions from merely plausible ones.
CO4	**Analyze** real world scenarios to recognize when Logic,sets,fuctions are appropriate,formulate problems about the scenarios,creatively model these

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	scenarios(using technology,if appropriate)inorder to solvethe problems using multiple approaches.
CO5	**Apply** knowledge of mathematics,physics and modern computing tools to scientific and engineering problems.

Semester:- IV   Subject:-Data Structure and Program Design
Subject Code: BTECHCSE402T

Course Outcomes:

After completing the course:

Students will able to	
CO1	**Determine** the complexity of algorithms and sorting techniques.
CO2	**Discuss** the concept of stack and queues to solve real world problem.
CO3	**Describe** and implement linked list operation.
CO4	**Demonstrate** different methods for traversing trees.

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CO5	**Explain** the concepts of graphs to build solution.Design and Implement searching techniques and hashing function

Semester:- IV   Subject:- Data Structure and Program Design
Subject Code: BTECHCSE402P

Course Outcomes:

After completing the course:

Students will able to	
CO1	**Apply** Algorithm for solving problems like searching, sorting, insertion and deletion of data
CO2	**Design** stacks, queues and Linked Lists.
CO3	**Perform** problem involving graphs & trees.

Semester:- IV   Subject:-Database Management Systems
 Subject Code: BTECHCSE403T

Course Outcomes:

After completing the course:

Students will able to	
CO1	**Describe** basic database concepts and data modeling techniques used in database design.

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CO2	**Analyze** the concept of functional dependency and perform the calculus with Design database by using different normalization techniques.
CO3	**Evaluate** query processing and perform optimization on query processing;
CO4	**Discuss** the concept of transaction processing and different recovery techniques used in RDBMS
CO5	**Implement** advanced databases which are used real time system.

Semester:- IV   Subject:-Database Management Systems
Subject Code: BTECHCSE403P

Course Outcomes:

After completing the course:

Students will able to	
CO1	**Explore** career alternatives prior to graduation and assess interests and abilities in their field of study
CO2	**Identify,** write down, and carry out performance objectives related to their job assignment.
CO3	**Develop** communication, interpersonal and other critical skills in the job interview process and build a record of work experience.

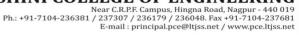**Semester:- IV   Subject:- Computer Network   Subject Code: BTECHCSE404T**

Course Outcomes:

After completing the course:

Students will able to

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CO1	**Demonstrate** the functions of each layer in OSI model along with basic networking concepts.
CO2	**Illustrate** physical layer functionality and its working along with transmission media with real time applications.
CO3	**Discuss** the functions of data link layer and explain the protocol used in data link layer.
CO4	**Classify** the routing protocols and analyze how to map IP addresses.Identify the issues related to transport layer,congestion control
CO5	**Identify** Quality of Service,DNS,Application layer protocols & Network security issues.

Semester:- IV   Subject:- Theory of Computation   Subject Code:BTECHCSE405T

Course Outcomes:
 After completing the course:

Students will able to	
CO1	**Design** finite automata and its minimization along with Moore and Mealy machines
CO2	**Apply** regular expression and create grammar for the same.
CO3	**Describe** context free grammar and various normal forms of CFGs.
CO4	**Create** Push Down Automata for the given CFG and inter-conversion of the same.
CO5	**Design** Turing Machine for the grammar and Deal with Recursive and Recursively Enumerable Languages.

Semester:- IV   Subject:- System Programming   Subject Code: BTECHCSE406T

Course Outcomes:

After completing the course:

	Students will able to
CO1	**Determine** the relevance of different system programs.
CO2	**Describe** the various data structures and passes of assembler design.
CO3	**Identify** the need for different features and designing of macros.
CO4	**Compare** different loaders and linkers and their contribution in developing efficient user applications.
CO5	**Analyze** the concepts of phases of compiler,LEX and YAAC.

Semester:- IV   Subject:- Internship   Subject Code:BTECH_CSE_408

Course Outcomes:

After completing the course:

	Students will able to
CO1	**Explore** career alternatives prior to graduation and assess interests and abilities in their field of study
CO2	**Identify,** write down, and carry out performance objectives related to their job assignment.
CO3	**Develop** communication, interpersonal and other critical skills in the job interview process and build a record of work experience.

Semester:- IV   Subject:- Computer Workshop II   Subject Code: BTECHCSE407P

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Course Outcomes:

After completing the course:

Students will able to	
CO1	**Install & Setup** python IDE and Perform operations on data types using operators, loops and conditional blocks in python
CO2	**Implement** functions, modules, classes and metHODs using python
CO3	**Implement** programs using numpy and pandas. Also perform various file operations using python.

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CBCS Scheme (New Scheme) - V Semester

University Course Code	Subjects	Teaching Scheme			Evaluation scheme			Credits	Category
		L	T	P	CA	UE	Total		
BTECHCSE501T	Artificial Intelligence	3	1	0	30	70	100	4	PCC-CS
BTECHCSE501P	Artificial I Intelligence-Lab	-	-	2	25	25	50	1	PCC-CS
BTECHCSE504T	Design & Analysis of Algorithms	3	1	0	30	70	100	4	PCC-CS
BTECHCSE504P	Design & Analysis of Algorithms –Lab	-	-	2	25	25	50	1	PCC-CS
BTECHCSE502T	Software Engineering & Project Management	3	-	0	30	70	100	3	PCC-CS
BTECHCSE505T	Elective-I	3	-	0	30	70	100	3	PEC-CS
BTECHCSE503T	Effective Technical Communication	2	-	-	15	35	50	2	HSMC
BTECHCSE506P	Professional Skills Lab I	-	-	2	25	25	50	1	ESC
BTECHCSE507T	Yoga and Meditation (Audit Course)	0	0	2	50		50	Audit	MC
	Total	**16**	**02**	**06**	**245**	**340**	**600**	**19**	

Elective-I: 1. TCP/IP   2. Design Pattern   3 . Data Warehousing and Mining

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Semester:- V   Subject:- Artificial Intelligence   Subject Code: BTECH CSE 501T

Course Outcomes:

After completing the course:

	Students will able to
CO1	**Demonstrate** knowledge of the building block of AI as presented in terms of intelligent agents.
CO2	**Formulate** the problem as a state space,graph,design heuristics and select amongst different search or game based techniques to slve them.
CO3	**Analyze** the basic issues of knowledge representation.
CO4	**Evaluate** the problems with uncertain information using Bayesian approaches.
CO5	**Identify** the capability to represent various real life problem domains using logic based techniques .

Semester:- V   Subject:- Artificial Intelligence   Subject Code: BTECH CSE 501P

Course Outcomes:

After completing the course:

	Students will able to
CO1	**Build** programming skills to formulate the solutions for AI computational problems.
CO2	**Acquire** the knowledge to develop solutions for AI problems.
CO3	**Utilize** advanced packages implementing artificial intelligence problems.

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Semester:- V Subject:- Software Engineering and Project Mgmt.
Subject Code: BTECH CSE 502T

Course Outcomes:

After completing the course:

Students will able to	
CO1	**Discuss** the software engineering methods.practices,process models and application.
CO2	**Describe** the various software engineering life cycle models and apply methods for design and development of software projects.
CO3	**Demonstrate** the requirements for product and translate these into a documented design using different modeling techniques.
CO4	**Formulate** software testing methods , its types. Understand debugging concept with various testing methods.
CO5	**Illustrate** the principles,processes and main knowledge areas for Software Project Management

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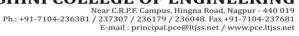---

Semester:- V   Subject:-Design & Analysis of Algorithms
Subject Code: BTECH CSE 504T
Course Outcomes:

After completing the course:

Students will able to	
CO1	**Illustrate** different approaches for analysis and design of efficient algorithms and Analyze performance of various algorithms using asymptotic notations.
CO2	**Determine** various divide & conquer strategies and greedy approaches for solving a given computational problem.
CO3	**Demonstrate** various realtime problems using the concepts of dynamic programming.
CO4	**Apply** backtracking and graph traversal techniques for solving real-world problems.
CO5	**Classify** the NP-hard and NP-complete problems.

Semester:- V   Subject:- Design & Analysis of Algorithms
Subject Code: BTECH CSE 504P

Course Outcomes:

After completing the course:

Students will able to	
CO1	**Examine** the time complexity of various algorithms and apply the different searching and sorting techniques.

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CO2	**Develop** programs for the problems using Divide and Conquer and Greedy algorithms.
CO3	**Design** programs for the problems using Dynamic Programming and Backtracking.

Semester:- V   Subject:- TCP/IP   Subject Code: BTECH CSE 505.1T

Course Outcomes:

After completing the course:

Students will able to	
CO1	**Infer** the layers of the TCP/IP model.
CO2	**Analyze** the services of TCP/Ip protocol and be able to deal with its layers.Also the concepts of IP addressing.
CO3	**Apply** the knowledge of routing protocols.
CO4	**Implement** basic computer network protocols and how they can be used to help develop and execute networks.
CO5	**Develop** the solution for basic issues of Internet Mechanism and its security.

Semester:- V   Subject:- Data Warehousing and Mining
  Subject Code: BTECH CSE 505.3T

Course Outcomes:

After completing the course:

Students will able to	
CO1	**Demonstrate** the basic concepts of Data Warehouse and Data Mining techniques.

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CO2	**Construct** a data warehouse and to process raw data..
CO3	**Analyze** the basic classification ,clustering on a set of data.
CO4	**Identify** frequent data items and to apply association rule on a set of data.
CO5	**Discuss** the recent trends of data mining such as web mining.

Semester:- V   Subject:- Professional Skills I   Subject Code:BTECH_CSE_505P

Course Outcomes:

After completing the course:

Students will able to	
CO1	**Illustrate** a static, interactive and well formed webpage using HTML and CSS
CO2	**Use** JavaScript to improve accessibility of a web document.
CO3	**Analyze** Server -side scripting with PHP for designing and developing web applications

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CBCS Scheme (New Scheme) - VI Semester

University Course Code	Subjects	Teaching Scheme			Evaluation scheme			Credits	Category
		L	T	P	CA	UE	Total		
BTECHCSE601T	Compiler Design	3	1		30	70	100	4	PCC-CS
BTECHCSE601P	Compiler Design -Lab	-	-	2	25	25	50	1	PCC-CS
BTECHCSE603T	Elective-II	3	-	-	30	70	100	3	PCC-CS
BTECHCSE604T	Elective-III	3	-	-	30	70	100	3	PCC-CS
BTECHCSE605T	Open Elective-I	3	--	-	30	70	100	3	OEC
BTECHCSE606P	Professional Skills Lab II	-	-	2	25	25	50	1	PCC-CS
BTECHCSE602P	Hardware Lab	-	-	2	25	25	50	1	ESC
BTECHCSE607P	Mini Project	-	-	6	50	50	100	3	PROJ-CS
BTECHCSE608T	Economics of IT Industry	2	0	2	15	35		2	HSMC
BTECHCSE609P	Intellectual Property Rights (AuditCourse)	-	-	-	50	-	50	Audit	PCC
	Total	**19**	**03**	**06**	**290**	**460**	**750**	**24**	
Elective-II: -	1. Machine Learning 2. Internet of Things 3. Cluster and Cloud Computing								
Elective-III: -	1. Data Science 2. Distributed Operating Systems 3. Human Computer Interaction								
Open Elective	1:- 1. Linux Fundamentals 2. Android Application Development 3. Blockchain Technologies								

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Semester:- VI   Subject:- Compiler Design   Subject Code:BTECH SE601T

Course Outcomes:

After completing the course:

	Students will able to
CO1	**Explain** the compiler along with phases and basic programs in LEX.
CO2	**Develop** programs for various kinds of the Parsers.
CO3	**Construct** a simple programs related to Type Checking,Parameter Passing & Overloading.
CO4	**Analyze** the concepts of Code Optimization and Code Generation.
CO5	**Create** the Case Studies of Object -Oriented Compilers.

Semester:- VI   Subject:-Compiler Design Lab   Subject Code:BTECH CSE 601P

Course Outcomes:

After completing the course:

Students will able to	
CO1	**Evaluate** the working of lexical analyzer.
CO2	**Develop** programs to implement concept of Top-Down and Bottom-Up parsing techniques.
CO3	**Design** programs for the code generator with the help of code optimization concept.

Semester:- VI   Subject:-Hardware Lab   Subject Code:BTECH CSE 602P

Course Outcomes:

After completing the course:

Students will able to	
CO1	**To learn** how Setup and install the Arduino platform works in terms of the physical board and libraries and the IDE.
CO2	**Program** the Arduino microcontroller to make the circuits work.
CO3	**Implement** interfacing of various sensors with Arduino.

Semester:- VI   Subject:-Elective II: Machine Learning
Subject Code: BTECH CSE 602.1T

Course Outcomes:

After completing the course:

Students will able to

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CO1	**Identify** the basics of machine learning techniques.
CO2	**Determine** the different types of Regression Technique.
CO3	**Summarize** the classification techniques.
CO4	**Discuss** unsupervised machine learning techniques
CO5	**Illustrate** machine learning techniques to real world problems.

Semester:- VI   Subject:- Elective III: Data Science
Subject Code: BTECH CSE 603.1T

Course Outcomes:

After completing the course:

Students will able to	
CO1	**Identify** the significance of exploratory data analysis in Data Science.
CO2	**Demonstrate** the usage of Random Sampling and bias in a given dataset.
CO3	**Analyze** the various Statistical Experiments through various types popular testing methods.
CO4	**Discuss** regression techniques to estimate outcomes and detect anomalies.
CO5	**Illustrate** the classification techniques.

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Semester:- VI Subject:- Elective III:Distributed Operating Sys.
Subject Code:BTECH CSE 603.1T

Course Outcomes:

After completing the course:

	Students will able to
CO1	**Describe** the principles, architectures, algorithms and programming models used in distributed systems.
CO2	**Summarize** the core concepts of distributed systems.
CO3	**Build** simple distributed systems using different algorithm.
CO4	**Analyze** the Distributed File System,Architecture and Mechanism.
CO5	**Identify** the Distributed Scheduling,Issues in Load Distributing,components of a Load Distributing Algorithm,Load Distributing Algorithms.

Semester:- VI Subject:- Open Elective I: Block-chain Technologies
Subject Code:BTECH CSE 604.1T

Course Outcomes:

After completing the course:

	Students will able to
CO1	**Identify** emerging abstract models for Block chain Technology.
CO2	**Analyze** the concept of cryptocurrency and mathematical background behind it.
CO3	**Describe** the tools for understanding the background of bitcoins.
CO4	**Identify** major research challenges and technical gaps existing between theory and practice in crypto currency domain.

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CO5	**Demonstrate** the latest advances and its applications in Block Chain Technology.

Semester:- VI   **Subject:-Professional Skills II**
 Subject Code:BTECH CSE 605P

Course Outcomes:

After completing the course:

Students will able to	
CO1	**Apply** various supervised learning methods to appropriate problems
CO2	**Illustrate** unsupervised learning models for handling unknown patterns.
CO3	**Analyze** the co-occurrence of data to find interesting frequent patterns and Preprocess the data before applying to any real-world problem

Semester:- VI   **Subject:- Mini Project**   **Subject Code:BTECH CSE 607P**

Course Outcomes:

After completing the course:

Students will able to	
CO1	**Review** the literature and develop solutions for framed problem statement.
CO2	**Build** project plans with feasible requirements
CO3	**Implement** hardware and/or software techniques for identified problems.
CO4	**Test** and analyze the modules of planned project.
CO5	**Write** technical report and deliver presentation

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Semester:- VI   **Subject:- Intellectual Property Rights**
Subject Code:BTECH CSE 609T

Course Outcomes:

After completing the course:

Students will able to	
CO1	**Identify** fundamental aspects of Intellectual property Rights..
CO2	**Apply** knowledge on patents, patent regime in India and abroad and registration aspects.
CO3	**Demonstrate** copyrights and its related rights and registration aspects.
CO4	**Determine** the trademarks and registration aspects.
CO5	**Apply** knowledge on Design, Geographical Indication (GI), Plant Variety and Layout Design Protection and their registration aspects.

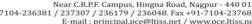**Semester:- VI   Subject:- Open Elective I: Linux Fundamentals**
Subject Code:BTECH CSE 609T

Course Outcomes:

After completing the course:

Students will able to	
CO1	**Summarize** the linux architecture,different Linux installation and Linux commands.

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CO2	**Implement** Linux Environment using shell, file system, scripts, filters and program development tools.	
CO3	**Categorize** user, group management, package management through commands.	
CO4	**Integrate** storage management and failure recovery through commands.	
CO5	**Identify** tasks and develop simple programs using shell scripts.	

CBCS Scheme (New Scheme) – VII Semester

University Course Code	Subjects	Teaching Scheme			Evaluation scheme			Credits	Category
		L	**T**	**P**	**CA**	**UE**	**Total**		
BTECHCSE701T	Cryptography & Network Security	3	1		30	70	100	4	PCC-CS
BTECHCSE701P	Cryptography & Network Security	-	-	2	25	25	50	1	PCC-CS
BTECHCSE702T	Program Elective-IV	3	-	-	30	70	100	3	PCC-CS

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BTECHCSE703T	Program Elective-V	3	-	-	30	70	100	3	PCC-CS
BTECHCSE704T	Open Elective-II	3	--	-	30	70	100	3	OEC
BTECHCSE705T	Project	-	-	6	25	25	50	3	PROJ-CS
BTECHCSE706T	Research Methodology (Audit Course)	2	-		25	25	50	-	HSMC
	Total	**14**	**01**	**8**	**120**	**280**	**550**	**17**	
Elective-IV:	i) Deep Learning ii) Optimization Techniques iii) Gaming Architecture iv) salesforce								
Elective-V:	i) Natural Language Processing ii) Big Data Analytics iii) Mobile Computing								
Open Elective-II:	i) Python Programming ii) JAVA Programming iii) Basics of Database Management System								

Semester:- VII   Subject:-Cryptography and Network Security
Subject Code: BTECH CSE 701T

Course Outcomes:

After completing the course:

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	Students will able to
CO1	**Illustrate** knowledge about security goals,background of cryptographic mathematics and identification of its application.
CO2	**Analyze** and implement-the symmetric key algorithm.
CO3	**Apply** knowledge about the background of mathematics of asymmetric key cryptography and understand and analyze-asymmetric key encryption algorithms,digital signatures..
CO4	**Describe** the concept of message integrity and the algorithms for checking the integrity of data.
CO5	**Compare** existing cryptosystem used in networking.

Semester:- VII   Subject:-Cryptography and Network Security
Subject Code:BTECH CSE 701P

Course Outcomes:

After completing the course:

	Students will able to
CO1	**Implement** & Understand cryptography basics, algorithms and mathematical background for cryptography
CO2	**Develop** & Examine the important cryptographic algorithms symmetric amd asymmetric algorithms.
CO3	**Design** key management issues and algorithms.

Semester:- VII   Subject:- Elective-IV :Deep Learning
Subject Code: BTECH CSE 702T

Course Outcomes:

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After completing the course:

Students will able to	
CO1	**Summarize** the basic of deep learning algorithm.
CO2	**Construct** feedforward neural network.
CO3	**Evaluate** the performance of Deep Learning Models with respect to the optimization ,bias variance trade of ,over fitting and under fitting.
CO4	**Implement** the convolution networks in context with real world problem solving.
CO5	**Construct** recurrent neural networks in context with real world problem solving.

Semester:- VII   Subject:- Elective V :Big Data Analytics
Subject Code:BTECH CSE 703T

Course Outcomes:

After completing the course:

Students will able to	
CO1	**Describe** the concept, characteristic and types of big data.
CO2	**Build** and maintain reliable,scalable,distributed systems with Apache Hadoop.
CO3	**Analyze** Hadoop ecosystem components to solve real world problems.
CO4	**Design** machine learning algorithm for big data analysis.
CO5	**Implement** Big Data Activities using Hive.

Semester:- VII   Subject:- Elective V:Natural Language Processing
Subject Code:BTECH CSE 703T

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Course Outcomes:

After completing the course:

Students will able to	
CO1	**Analyze** the basic concepts and applications of Natural Language Processing(NLP).
CO2	**Identify** the challenges in NLP and evaluate the solutions to these challenges.
CO3	**Describe** the preprocess text data for NLP tasks.
CO4	**Analyze** the different NLP techniques and algorithms such as text classification,information retrieval and extraction,syntactic and semantic analysis,and deep learning models.
CO5	**Evaluate** and compare different NLP techniques and algorithms using appropriate metrics.

CBCS Scheme (New Scheme) – VIII Semester					
University		**Teaching Scheme**	**Evaluation scheme**	**Credits**	**Category**

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Course Code	Subjects	L	T	P	CA	UE	Total		
BTECHCSE801T	Industry Project /project**	-	-	16	75	75	150	8	PCC
BTECHCSE802T	Program Elective* VI/ MOOC	3	-	-	30	70	100	3	PCC
BTECHCSE803T	Program Elective* VII/ MOOC	3	-	-	30	70	100	3	PCC
	Total	6	-	16	135	215	350	14	

Elective-VI: i) Social Networks   ii) Reinforcement Learning   iii) GPU Architecture and Programming

Elective-VII: i) Predictive Analytics - Regression & Classification   ii) Blockchain and its applications
  iii) Computer Vision

Semester:- VIII   Subject:-Reinforcement Learning   Subject Code: BTECHCSE802T

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Course Outcomes:

After completing the course:

Students will able to	
CO1	**Describe** Bandit algorithm and its mathematical formulation.
CO2	**Analyze** dynamic programming for reinforcement learning.
CO3	**Illustrate** function approximation and apply LSM.
CO4	**Determine** Fit Q, DQN & Policy Gradient for Full RL.
CO5	**Discuss** combinatorial models for complex problems.

Semester:- VIII   Subject:- Social Networks   Subject Code: BTECHCSE802T

Course Outcomes:

After completing the course:

Students will able to	
CO1	**Describe** social networks,its types and representation.
CO2	**Compare** weak ties,strong and weak relationships,homophily and calculate.
CO3	**Analyze** links.
CO4	**Discuss** Power Laws and Rich-Get-Richer Phenomena.
CO5	**Illustrate** Small World Phenomenon.

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Semester:- VIII   Subject:- BlockChain and its Application
Subject Code:BTECH CSE 803T

Course Outcomes:

After completing the course:

Students will able to	
CO1	**Identify** basic crypto primitives.
CO2	**Describe** elements and evolution of blockchain.
CO3	**Compare** consensus in permissionless and permissioned models.
CO4	**Discuss** ethereum smart contracts and hyperledgers.
CO5	**Analyze** decentralized identity management,interoperability.

Semester:- VIII   Subject:- Predictive Analy. Reg. & Classification
Subject Code:BTECH CSE 803T

Course Outcomes:

After completing the course:

Students will able to	
CO1	**Examine** predictive models,LSM,Normal equations and GMT.
CO2	**Analyze** regression models and infer its statistical inference.
CO3	**Determine** model assumptions and bias variance tradeoff.
CO4	**Apply** regression analysis in various programming languages.
CO5	**Design** regression models and classification for predictive analysis.

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