B. Tech VI Electives Even Semester 2023

B.2	Open Elective-1 (For VI Sem students of all branches of B.Tech) - To be provided by all departments			
	23B12CS341	Cyber Security	ECE,INT.(ECE),BT,INT.(BT)	60

23B12CS341
Cyber Security
Dr. Deepika Varshney

Introduction to Cyber security, Cyber crime and Cyber law.

Understand the cyber world,overview of computer and web technologies in general and concepts of cyber-crimes.

Develop a deeper understanding and familiarity with various types of cyberattacks, cyber-crimes, vulnerabilities and remedies thereto.

Analyse and evaluate the security aspects of social media platforms and ethical aspects associated with use of social media.

Analyse and evaluate the digital payment system security and remedial measures against digital payment frauds.

Understand the concepts of mobile phone security and configuration of basic security policy and permissions.

B.3	DE-2 (Open to concerned discipline of VI sem BTech) - To be provided by CSE & IT/ECE				
	21B12CS312	Sensor Technology & Android Programming	CSE, IT, INT. (CSE)	90	Dr. Hema N.
	21B12CS319	Fundamentals of Soft Computing	CSE, IT, INT. (CSE)	120	Dr. Parul Aggarwal
	21B12CS314	Introduction to Large Scale Database Systems	CSE, IT, INT. (CSE)	90	Dr. Indu Chawla
	21B12CS315	Web Technology and Cyber Security	CSE, IT, INT. (CSE)	120	Dr. Bhawna Saxena
	21B12CS316	Introduction to Compiler Design	CSE, IT, INT. (CSE)	60	Dr. Shikha Jain

Sensor Technology & Android Programming

Dr. Hema N.

Sensing and Sensor Fundamentals: Sensing Modalities, Mechanical Sensors, MEMS Sensors, Optical Sensors, Semiconductor Sensors, Electrochemical Sensors, Biosensors Key Sensor Technology Components Hardware and Software Overview: Smart Sensors, Sensor Systems, Sensor Platforms, Microcontrollers for Smart Sensors, Microcontroller Software and Debugging. Overview of the Android Platform: Introducing Android, Setting Up Your Android Development Environment. Android Application Basics: Anatomy of an Android Application, Android Manifest File, Managing Application Resources. Android User Interface Design Essentials: Exploring User Interface Building Blocks, Designing with Layouts, Partitioning the User Interface with Fragments, Displaying Dialogs. Overview of Physical Sensors: Android Sensor API, Sensing the Environment, Sensing Device Orientation and Movement. Detecting Movement: Acceleration Data. Sensing the Environment: Barometer vs. GPS for Altitude Data Android Open Accessory (AOA): AOA Sensors versus Native Device Sensors, AOA Beyond Sensors, AOA Limitations, AOA and Sensing Temperature. RFID, Near field communication (NFC), Inventory Tracking System using NFC, Camera Activity, Barcode Reader, Image Processing using AOA, Android Clapper and Media Recorder. Development of android services such as motion detection, Air Monitoring, Screen Brightness Monitoring, Acceleration, Position, Air Pressure Monitoring, and Monitor of Temperature

Sensor Technology & Android Programming

Dr. Hema N. (J62)

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COURSE OUTCOMES **After the completion of the course, the students will be able to**		**COGNITIVE LEVELS**
CO1	Understand the sensor, smart sensors and various platform of sensing devices	Level-1 (Knowledge)
CO2	Understand Anatomy of an android developing environment for sensing application	Level-2 (Comprehension)
CO3	Accessing various physical sensors of the sensors and its programming	Level-3 (Application)
CO4	Develop various user services using Android and sensors	Level-6 (Create)

Introduction to Large Scale Database Systems

Dr. Indu Chawla (J62)

Review of database systems, Data sources and join processing, modelling and query languages

Transaction processing concepts, Concurrency control techniques and protocols

Data storage and indexing of massive databases in databases and data warehouses. Introduction to technologies for handling big data

Measures of query cost, Evaluation of expressions, Query planning, evaluation and optimization

Review of Big data, CAP Theorem (consistency, availability, partition tolerance), Using big data in businesses, Data visualization for data analysis, NoSQL databases Hadoop core components, Hadoop Ecosystem components, Data storage and processing in Hadoop framework

Parallel and Distributed databases, Distributed Database Design, Architecture of Distributed DBMS

Graph databases, spatial and temporal databases

Introduction to Large Scale Database Systems

Dr. Indu Chawla (J62)

COURSE OUTCOMES		COGNITIVE LEVELS
CO1	Infer the background processes involved in queries and transactions, and explain how these impact on database operation and design	Understand level (Level 2)
CO2	Choose appropriate ways of storing data and optimize queries.	Analyze level (Level4)
CO3	Explain the concept and challenge of big data and demonstrate the comparison of relational database systems with NoSQL databases	Understand level (Level 2)
CO4	Compare and discover the suitability of appropriate large databases to manage, store, query, and analyze various form of big data	Analyze level (Level4)
CO5	Apply techniques for data fragmentation, replication, and allocation to design a distributed or parallel database system	Apply Level (Level3)

Fundamentals of Soft Computing

Dr. Parul Aggarwal (J62)

Concept of computing systems, Soft computing vs. Hard computing, Characterstics and applications of soft computing, methods of knowledge representation, Rough Set Theory

Fuzzy sets, operations of fuzzy sets, membership functions, Fuzzy realtions, rules and fuzzy inferences,Defuzzification techniques, Fuzzy expert systems. Application of fuzzy logic.

Fundamentals, Evolution of neural network, Basic models of Neural networks, Terminologies of ANNs, McCulloh – Pitts Neuron, Single Layer Perceptron, MultiLayer Perceptron Activation Functions (Linear, Sigmoid, Tanh, Relu, Leaky Relu), Loss Functions, optimization techniques (Gradient Descent, Stochastic Gradient Descent, Mini Batch Gradient Descent, ADAM, RMSProp, AdaGrad, Nadam)

Feed forward, Back Propagation Network, batch normalization, one hot, dropout, embedding, LSTM, GRU, CNN + RNN, Bi-Directional RNN

Boltzmann machines, autoencoders, encoder-decoder, variational autoencoder, stack, convolutional autoencoder

Web Technology and Cyber Security

Dr. Bhawna Saxena (J62)

HTML, CSS, JavaScript Basics, Primitives , Functions, Objects , Event - Driven Programming ,Callbacks

Understanding SPA, React Overview, React vsAngular,React Deep-Dive, Composition over Inheritance, Declarative code with JSX, Unidirectional Data Flow, Components, Life Cycle, React Router

Introduction to Node JS, Event Loop, REPL, Modules , REST, Scaling

Developing web applications using Django, Drupal, Bootstrap, Flask, JQuery

Cross Site Scripting, Cross Site Request Forgery, XML External Entity (XXE) attacks and their countermeasures

SQL injection, code injection and Command injection Attacks and their Defenses

Denial of Service and Distributed Denial of Service Attacks on Web Applications and Defenses

Principles of Cyber Security and Secure Application Architecture

DNS Attacks and DNSSec , SSL/TLS. VPNs , HTTPs and IPSec

Web Technology and Cyber Security

COURSE OUTCOMES		COGNITIVE LEVELS
1.	Apply the fundamental elements of Web development in design of web pages	Apply (level 3)
2.	Understand the web development concepts built on Advanced Java Scripting	Understand (level 2)
3.	Use the popular web development frameworks to build web applications	Apply (level 3)
4.	Apply hacking techniques to attack websites and describe their countermeasures	Apply (level 3)
5.	Understand defense mechanisms for cyber security	Understand (level 2)

Introduction to Compiler Design

Dr. Shikha Jain (J62)

Bootstrapping, Language Processors and Types of compilers, Structure of a Compiler

Lexical Analyzer : Input Buffering, Token Specification and recognition, design of lexical analyzer generator

CFG, Parse Tree, AST, Ambiguity, Top Down parsing: Recursive Descent, LL(1)

Bottom-up Parsing: LR, LALR, Operator Precedence

Syntax-Directed Translation, Evaluation orders for syntax-directed definitions, Inherited and synthesized attributes

Run-Time Storage Management and Symbol Table Management

Three address code, type equivalence, type checking, control flow, Backpatching, Code for Expressions, Assignment, and Arrays, Code for Boolean and Relational Operators, Conditionals , Control-flow ,Procedure calls, basic blocks and flow graphs, optimization of basic blocks, Global Register Allocation ,Code generation for expressions

Constant propagation, copy propagation, common Sub-expression elimination,

dead code elimination, code motion and introduction to Data flow analysis

Introduction to Compiler Design

Dr. Shikha Jain (J62)

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COURSE OUTCOMES		COGNITIVE LEVELS
CO1	Understand the major phases of compilation	Understand Level (C2)
CO2	Develop the parsers and experiment the knowledge of different parsers design without automated tools	Apply Level (C3)
CO3	Construct the intermediate code representations and generation	Apply Level (C3)
CO4	Convert source code for a novel language into machine code for a novel computer	Apply Level (C3)
CO5	Apply for various optimization techniques for dataflow analysis	Apply Level (C3)

B.4	DE-3 (Open to concerned discipline of VI sem BTech) - To be provided by CSE & IT/ECE				
	21B12CS317	Introduction to Blockchain Technology	CSE, IT, INT. (CSE)	90	Dr. Kapil Madan
	21B12CS318	Big Data Ingestion	CSE, IT, INT. (CSE)	90	Mrs Kirti Aggarwal
	21B12CS320	Open source software development	CSE, IT, INT. (CSE)	120	Mr. Kashav Ajmera
	21B12CS313	Fundamentals of Distributed and Cloud Computing	CSE, IT, INT. (CSE)	120	Dr. Prakash Kumar
	21B12CS321	Concepts of Graph theory	CSE, IT, INT. (CSE)	60	Dr. Manish K. Thakur

Introduction to Blockchain Technology

Dr. Kapil Madan (J62)

Overview, Digital Age, Internet of Information, Concept of Trust, Trust protocol, What is blockchain, how blockchain works, steps in Blockchain transaction, Main components of Blockchain.

Importance of distributed consensus, Hashing, public key cryptosystems, private vs public blockchain and use cases, Hash Puzzles.

Network integrity, Distributed Power, Value as Incetives, Security, Privacy, Rights Preservation, Inclusion, and Guidelines for choosing Blockchain project. Example case studies, Application areas.

1) The Technology challenges, 2) The Energy Consumption, 3) Governments role, 4) Impact of Old Paradigms 5) Challenges with the Incentives, 6) Blockchain as Job Killer, 7) Governing the Protocols, 8) Distributed Autonomous Agents, 9) Privacy, 10) Malicious usage

The real need for mining – consensus – Byzantine Generals Problem, and Consensus as a distributed coordination problem, Consensus algorithms, RAFT, Paxos, Byzantine fault Tolerance, PBFT, PoW, PoS.

Introduction to digital currency, Crypto currency, Explanation of Bitcoin with concepts covered in Module 1, 2, and 3.

Cryptographic methods in Bitcoin, Hashing in Bitcoin, Overview of Hash puzzle in Bitcoin, Consensus in Bitcoin, Bitcoin block structure, block creation and storage, and Bitcoin wallets.

Metrics to be considered for designing cryptocurrencyblockchain.

Role of Bitcoin scripts, advantage of smart contracts, Introduction to REMIX IDE, Introduction to Solidity smart contracts, Solidity structure and languge syntax, Deploying and interacting with smart contracts via Remix IDE.

Getting started with Node js, Role of Node js in crypto currency development, Front end development in Node js, Back end development in Node js, Best practices, case study.

Introduction to Blockchain Technology

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COURSE OUTCOMES		COGNITIVE LEVELS
CO1	Define all the basic terminologies related to blockchain, bitcoin, decentralized applications and smart contracts.	Remember Level (Level 1)
CO2	Understand the pillar security featured in decentralized networks like cryptography, digital signatures, Proof of work and consensus algorithms.	Understand Level (Level 2)
CO3	Develop acryptocurrency using Node js.	Apply Level (Level 3)
CO4	Develop smart contract using REMIX IDE for different real world scenarios.	Apply Level (Level 3)
CO5	Analyze various consensus algorithms like PoW, PoS, PoB, Raft consensus, Paxos consensus, BFT etc.	Analyze (Level 4)

Big Data Ingestion

Mrs. Kirti Aggarwal (J62)

Review of Big Data landscape, Big Data: Why and where, Characteristics of Big Data (V's of Big Data) and Dimensions of Scalability, Data Ingestion, Data Collection, Data processing, Data Storage Layer, Data querying and Data Visualization Layer, Concepts of Data Ingestion, Data Storage, Data Quality, Data operations

Structured vs semi-structured vs unstructured, batch vs streams, Understanding Data Lakes, Exploring the Relational Data Model of CSV Files, Exploring the Semi-structured Data Model of JSON data, Exploring the RC and ORC file formats, Exploring Streaming Sensor Data, Exploring Streaming Twitter Data

Need, parameters, challenges, key functions, Big data Ingestion Tools: Common features, objectives, benefits, examples

Big Data Technologies: Hadoop, NoSQL and NewSQL, Using Hadoop to store data (HDFS, HBASE), From DBMS to BDMS, Redis: An Enhanced Key-Value Store, Semi-structured Data – AsterixDB, Solr: Managing Text, Relational Data – Vertica

Sqoop Import, Import data from MySql to HDFS, Other variations of Sqoop Import Command, Sqoop Export Command, Sqoop Jobs

What is flume, and where it is used. difference between flume and sqoop. how flume works, what is flume agent what are the components of flume agent, how data flows between various components of the flume

Apache Kafka, Apache Storm, Amazon Kinesis, DataTorrent etc.

Big Data Ingestion

COURSE OUTCOMES		COGNITIVE LEVELS
1	Explain the fundamental concepts of Big data and data analytics	Understand Level(Level 2)
2	Understand the various formats of big data and their sources	Understand Level(Level 2)
3	Outline the need and challenges of Big Data Ingestion	Outline Level 2
4	Explain the various types of storage for Big Data such as Hadoop Distributed File Systems, NoSQL and NewSQL.	Explain Level 2
5	Apply BDI tools as Sqoop and Flume to ingest data into a big data system.	Apply Level 3

Open source software development

Mr. Kashav Ajmera (J62)

Introduction to Open Source Softwares:
Open Source Software, Working in OSS projects, Building Better OSS Projects
Git for distributed development:
Git and Git Installation, Working with Git, Working with Other Developers
Linux tools for a developer
Introduction to linux, Working with linux (vi editor, emacs editor) Introduction to File system (Using fdisk, Partitioning Considerations), System Components (System Boot, Using GRUB (Demo), System Initialization, Using Swap and OOM (Demo), Threading Models, Using Predictable Network Interface Device Names), Linux Commands (on File Transfer Tools, Graphical Monitoring Tools, System Monitoring, Kernel Modules, Device Management, udev)
Python and its libraries
Basic syntax, loops, strings, lists, dictionary, Managing Files with Python. Python libraries (NumPy, SciPy, matplotlib, scikit-learn, pandas, NLTK, Keras, PyTorch, TensorFlow, XGBoost, SeaBorn, Bokeh, Ploty,)
Virtualization
Introduction to virtualization, types of virtualization, hypervisor, Types of the hypervisor, virtual machine creation
Openstack cloud computing platform
Cloud overview, cloud history, Introduction to OpenStack, OpenStack Architecture, Openstack Installation, Horizon Dashboard, CLI Client, Multi-node design & scaling OpenStack

Open source software development

Mr. Kashav Ajmera (J62)

Course Objectives

1. Explain the benefits of using OSS as compared to using proprietary products, key concepts involved in developing Open Source Software (OSS), Understand OSS licensing issues.
2. Demonstrate the working of Git repository hosting service through git commands to manage files, support version control and contribute to open source community by providing enhanced versions.
3. To learn Linux environment and tools required to successfully use it.
4. Develop programs using python language and Analyze baseline methods for pre-processing, clustering and classification algorithms using python libraries.
5. create a virtual machine using open source software Xen/KVM hypervisor
6. create your own cloud platform using OpenStack

Fundamentals of Distributed and Cloud Computing

Dr. Prakash Kumar (J62)

Review of Operating Systems principles, Introduction to Distributed Systems concepts.

Resource models. Clock synchronization. Event ordering. Timestamps recording. Global state collection mechanisms.

Election Algorithms: Ring and Bully Algorithms, Termination Detection,

Distributed mutual exclusion. Token and non-token based algorithms. Comparative performance analysis.

Process deadlocks in DS. Deadlock handling techniques.

System Model, Classification, Byzantine Problems and solutions.

Data-centric consistencies, Client-centric consistencies. Epidemic Protocols.

Fault Tolerance, Reliability in Distributed Systems, group communications, and Distributed commit. Failure Recovery.

Introduction to cloud computing, Correlation between Distributed and Cloud Models.

Deployment Models, Service models, SaaS, PaaS, IaaS. Essential Characteristics, Foundational Elements, Enabling Technologies for Cloud.

Virtualization Technology, Virtualization Techniques, Virtual Machines, Virtual Machine Monitors, Live Migrations, Virtual Clusters. Intel Virtualization Technology: Challenges, Addressing the challenges in IVT.

Data and Network security in cloud, Access control and authentication in cloud computing.

Fundamentals of Distributed and Cloud Computing

Dr. Prakash Kumar (J62)

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COURSE OUTCOMES		COGNITIVE LEVELS
CO1	Identify and solve event ordering related problems occurring due to various synchronization related issues in distributed systems.	Identify, Solve (Level 3)
CO2	Compare analysis for Distributed Mutual exclusions and deadlock handling techniques in distributed environments.	Compare (Level 2)
CO3	Evaluate data consistency, replication and fault related issues for various distributed scenarios.	Evaluate (Level 5)
CO4	Understand various Deployment Models, Cloud Service Models, Essential Characteristics, Foundational Elements and Enablers, Cloud Architecture.	Understanding (Level 2)
CO5	Analyze various Virtualization Techniques, Virtual Machine Provisioning, Migration techniques and their performances in cloud environments.	Analyze Level (Level 4)

Concepts of Graph theory

Dr. Manish Thakur (J62)

Graph representation using Adjacency Matrix and List, Incidence Matrix, Cycle Matrix, Cut-set Matrix, Path Matrix, *etc.,* Connectedness, Spanning Tree, Cut set and Bridges, Shortest Path, Topological sorting, Transitive Closure, Matching etc.

DFS, BFS, Shortest paths, Optimal tours, Cycle detection, Euler's Cycle, Hamiltonian Cycle, TSP, etc.

Minimum Spanning Tree, Steiner Tree, Depth First Search Spanning Tree, Breadth First Search Spanning Tree, *etc.*

Reliable communication network design, Articulation points, Bridges, Multiway cut, Minimum K-cut, *etc.*

Personnel assignment, Optimal assignment, Hungarian Algorithm, Stable Marriage, Project Allocation, etc.

Vertex Cover, Set Cover, Shortest superstring, Geometric problems, etc.

Algorithms for Graph Coloring, Applications in Storage management, Timetable schedules, etc.

Planarity detection, PCB design, Facilities layout and floor plan design, Software testing, Defense strategies, etc.

Counting labeled and unlabeled trees, Polya's counting theorem, Equivalence classes

Contact network analysis and synthesis, Sequential switching networks, graphs in coding theory

Transport networks, Job sequencing, Disk scheduling, Participant rankings in tournaments, Choice consistency, Project management, etc.

Max-flow min-cut, Feasible flows, Transportation problems, Assignment problems, etc.

Concepts of Graph theory

Dr. Manish Thakur

COURSE OUTCOMES		COGNITIVE LEVELS
CO1	Find the shortest path, minimum spanning tree, maximum flow, articulation points, bridges, *etc.* in the given graph	Remember Level (C1)
CO2	Model the real world computational problems using graph	Understand Level (C2)
CO3	Apply conventional, approximation and evolutionary algorithmic approaches for graph based computational problems like, covering problems, set matching, planarity testing, graph reliability, *etc.*	Apply Level (C3)
CO4	Develop computing solutions for the real world computational problems modeled using graph	Create Level (C6)
CO5	Analyze the time and space complexities of the designed algorithms and developed solutions for the computational problems	Evaluate Level (C5)

B. 5	Value Added Courses (Open to VI Sem students of all branches of B Tech) - To be provided by all Departments				
	20B16CS 322	Java Programming	CSE,IT ECE,BT,INT(CSE/ECE/BT)	90	Dr. Shardha Porwal
	20B16CS 323	Problem Solving using C and C++	CSE,IT ECE,BT,INT(CSE/ECE/BT)	120	Mr. Prashant Kaushik
	20B16CS 324	Non-linear Data Structures & problem solving	CSE,IT ECE,BT,INT(CSE/ECE/BT)	120	Dr. Manju Chowdhary
	20B16CS 326	Front End Programming	CSE,IT ECE,BT,INT(CSE/ECE/BT)	90	Mr. Janardhan

20B16CS 322	Java Programming	CSE,IT ECE,BT,INT(CSE/ECE/BT)	90	Dr. Shardha Porwal

1.	Overview of OOA (Object Oriented Analysis) and Java basics	Classes, Objects, OOPs concept using JAVA, Packages and Interfaces.
2.	JVM Internals	Memory management, Garbage Collection
3.	String Handling	Using String and StringBuilder class. String Immutability(toString())
4.	Exception Handling in JAVA	Fundamentals, Exception types, Java built-in exceptions, Custom Exceptions, Chained Exceptions.
5.	Collections Framework	Collection Overview, List, Map (hashCode & Equals), Set, Queue & other collections
6.	Multithreading in Java	Multithreading overview and requirement, Thread state diagram, Java multithreading implementation (Thread/Runnable), Challenges in multithreading/Mutual Exclusion, Java handling of mutual exclusion (synchronization), Communication between threads (wait/notify)

20B16CS 323	Problem Solving using C and C++	CSE,IT ECE,BT,INT(CSE/ECE/BT)	120	Mr. Prashant Kaushik

Review and practice problems on Functions in C/C++	Functions, Alt function syntax, Function return type deduction, static, const and inline functions, default parameters, overloaded functions- operator and members, friends, overriding functions.
Practice problems on Arrays and Pointers and Indirections	Smart pointers, pointers and dynamic memory allocation, type inference, array and pointers and their arithmetic and indirections
Secure Coding practices in C/C++	Common String, Integer and dynamic memory allocation Errors, Integer and dynamic memory allocation and String vulnerabilities their mitigation strategies.
String Localization and Regular Expression	Localization and working with regular expression, Programming with Regex library
Practice problems on Exception Handing and Assertions	Errors and Exceptions, Exception Mechanisms, Exceptions and Polymorphism, Stack unwinding and Cleanup, Common error handling issues
Applications with Disk Files and other I/O	Using streams, Input and Output with Streams, String Streams, File Streams and Bidirectional I/O
Generic Programming with Templates	Class templates, Function templates, variable templates, Template parameters, Specialization of templates, template recursion, variadic templates, Meta-programming
Working with Standard Template Library	Understanding and working with containers, container adapters and iterators, Lambda expressions, Function objects, STL algorithms, Customize and extend STL
Programming using Dynamic Memory Allocation Model	Working with dynamic memory, array-pointer duality, low level memory operations, smart pointers and common memory pitfalls
Problems on Concurrency in Programming	Introduction, Threads, Atomic operations library, Mutual Exclusion, Conditional variables

20B16CS 324	Non-linear Data Structures & problem solving	CSE,IT ECE,BT,INT(CSE/ECE/BT)	120	Dr. Manju Chowdhary

Review of Problem Solving and Data Structures	Concepts of Problem Solving, Performance metrics for Algorithm Analysis, Why study Data structures and Abstract Data Types. Practice problems on Sparse Matrix
Practice problems on advanced list structures	Multi-list, skip list, XOR linked list, self organizing list, unrolled linked list
Practice problems on point and range queries using tree structures	**Suffix array and suffix tree**, Trie and persistent trie, Segment tree and persistent segment tree, Interval tree, K dimensional tree, Binary indexed tree, Splay tree, Treap (randomized BST), Order statistics tree
Practice problems on optimization problems using tree structures.	Tournament tree, Decision tree, Cartesian tree
Practice problems on heaps and sets	Sparse set, Disjoint set, Leftist heap, K-ary heap

20B16CS 326	Front End Programming	CSE,IT ECE,BT,INT(CSE/ECE/BT)	90	Mr. Janardhan

Object Oriented Programming Concepts	Objects, Classes, Abstraction, Encapsulation, Inheritance, Polymorphism
Introduction to basic front end techniques	HTML 5, CSS 3, Javascript, jquery, bootstrap
Java Fundamentals	Decision Making, Loop Control, Operators, Array, String, Overloading, Inheritance, Encapsulation, Polymorphism, Abstraction
Advanced Front End Programming Concepts	Storing and retrieving data, Python Programming Concepts, Python for developing Android Application.
Designing Android Application	Android development lifecycle, Learning UI and layout, controller, component, Directives, Services & views.
Android with Database	Data base Application Development
Privacy & Security Issues	Security Issues with Android Platform

THE END