Silver Oak University
Silver Oak College of Engineering and Technology
B.Tech. 6th Semester Computer Engineering Department
Mid Semester Exam Syllabus (December 2023- June 2024)

Subject Code	Subject Name	Syllabus Content
1010043226	Computing Architecture and Computation	**Unit 1 : Overview of Computing Technology :** Programming Language Grammars, Classification of Grammar, Ambiguity in Grammatic Specification, Scanning, Parsing, Top Down Parsing, Bottom up Parsing, Language Processor Development Tools,Overview of LEX & YACC
		Unit 2 : Introduction of Computation Tools : **Assemblers** : Elements of Assembly Language Programming, Design of the Assembler, Types of Assemblers **Compilers** : Causes of Large Semantic Gap, Binding and Binding Times, Data Structure used in Compiling, Scope Rules, Memory Allocation, Compilation of Expression, Compilation of Control Structure, Code Optimization **Interpreters & Debuggers :** Overview of Interpretation, Debugging Procedures, Classification of Debuggers **Macro and Macro Processors :** Macro Definition and Call, Macro Expansion, Nested Macro Calls, Design Of a Macro Preprocessor, Functions of a Macro Processor, Design Issues of Macro Processors **Linkers and Loaders :** Introduction, Design of a Linker, Dynamic Linking, Loaders, Different Loading Schemes, Linkers v/s Loaders
		Unit 3 : Regular Languages and Finite Automata : Sets, Function, Mathematical induction, Regular expressions, regular languages, Finite automata, Non Deterministic Finite Automata, Conversion from NFA to FA, - Non Deterministic Finite Automata Conversion of NFA- to NFA, Minimization of Finite Automata, Generating regular expression from finite automata, Closure Properties of Regular Language
		Unit 4 : Context free grammar (CFG): Introduction to Context Free Grammar, Derivations, Derivation Trees , Relationship between derivation and derivation trees, Ambiguity and Unambiguous CFG, Normal Form – CNF
		Unit 1 : Java Networking: Network Basics and Socket overview, TCP/IP client sockets, URL, TCP/IP server sockets, Datagrams, java.net package Socket, ServerSocket, InetAddress, URL, URLConnection , RMI architecture, RMI registry, Distributed application with RMI.
		Unit 2 : JDBC Programming: The JDBC Connectivity Model, Database Programming: Connecting to the Database, Creating a SQL Query, Getting the Results, Updating Database Data, Error Checking and the SQLException Class, The SQLWarning Class, The Statement Interface, PreparedStatement, CallableStatement The ResultSet Interface, Updatable Result Sets, JDBC Types, Executing SQL Queries, ResultSetMetaData, Executing SQL Updates, Transaction Management.

1010043339	**Advanced Java**	**Unit 3 : Servlet API and Overview:** Servlet Model: Overview of Servlet, Servlet Life Cycle, HTTP Methods, Structure and Deployment descriptor, ServletContext and ServletConfig interface, Attributes in Servlet, Request Dispacher interface The Filter API: Filter, FilterChain, Filter Config, Cookies and Session Management: Understanding state and session, Understanding Session Timeout and Session Tracking, URL Rewriting
		Unit 4 : Java Server Pages: JSP Overview: The Problem with Servlets, Life Cycle of JSP Page, JSP Processing, JSP Application Design with MVC, Setting Up the JSP Environment, JSP Directives, JSP Action, JSP Implicit Objects, JSP Form Processing, JSP Session and Cookies Handling, JSP Session Tracking ,JSP Database Access, JSP Standard Tag Libraries, JSP Custom Tag, JSP Expression Language, JSP Exception Handling, JSP XML Processing.
1010043367	**Mobile Application Development**	**Unit 1 : Android OS:** Introduction to Android, Android System with Architecture, Android Architecture, Development with Android – Platforms, Tools, Versions, Setup Android Environment, Say Hello to Android Application, Building Blocks of Android Application, Work with Activity, Activity Lifecycle, Intents Fragments, Fragment Lifecycle
		Unit 2 : Android UI Component, Graphics and Animations: Create Android UI, Work with Layouts, Create Custom Layouts, Work with UI Components and Events, Material Design Toolbar, Tab Layout, Recycler View and Card View,Android Menus, Custom Views, Vector Drawables, and View Animations, Media APIs.
		Unit 3 : Database Connectivity: Storage in Android, Shared Preferences, Android Requesting Permission at run time (Android 6.0), Work with SD Card and Files, Room Persistence Library, Scoped Storage.
		Unit 4 : Applicability to Industrial Projects: Web services and Parsing, JSON Parsing, Using Third Party Library: Retrofit
		Unit 5 : Fundamentals of Dart Programming for Flutter Working with Data Types, Variables and Constants, Functions, Loops, Control Flow, Classes and Objects
		Unit 6 : Publishing App in Android Signing the Android Application, Publishing Android Application.
1010043320	**Internet of Things**	**Unit 1 : Introduction to Internet of Things:** Application areas of IoT, Characteristics of IoT, Things in IoT, IoT stack, Enabling technologies, IoT challenges, IoT levels, IoT and cyber physical system, IoT and WSN
		Unit 2 : Sensors, Microcontrollers, and Their Interfacing: Sensor interfacing, Types of sensors, Controlling
		Unit 3 : Protocols for IoT: Messaging protocols, Transport protocols, IPv4, IPv6, URI

		Unit 4 : Cloud for IoT: IoT and cloud, Fog computing, Security in cloud
		Unit 5 : Application Building with IoT: Various application of IoT: Food, Healthcare, Lavatory maintenance, Water quality
1010043341	**Artificial Intelligence and Machine Learning**	**Unit 1 : Introduction to AI:** Basic concepts of AI, Tools and technologies of AI , Comparison of AI with other Technologies, Problem characteristics of AI, Application areas of AI, Types of learning.
		Unit 2 : Exploratory Data Analysis: Intro to Descriptive statistics, Data and histogram, Central tendencies 3Ms, Measures of Dispersion, Range and IQR, Standard deviation, Five number summary:- box plot
		Unit 3 : Inferential Statistics: Statistical tools in Machine Learning, Concepts of probability, Random variables, Discrete distributions, Continuous distributions, Multiple random variables, Central limit theorem, Sampling distributions, Evaluation and Cross Validation, Importance of Bayesian methods, Bayesian theorem, Bayes'theorem and concept learning, Bayesian Belief Network
		Unit 4 : Supervised Learning: Introduction to Supervised Learning, Examples of various datasets, Classification and Regression model:- Linear Regression, Logistic Regression, Polynomial Regression, Decision Tree, Random Forest, Naïve Bayes, SVM.
		Unit 5 : Unsupervised Learning: Introduction to Unsupervised Learning, Example of various datasets, Clustering algorithm:- K-Means, Dimensionality reduction:- Principal Component Analysis.

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HOD, CE