COMPANY PROFILE

Warm Welcome to Join Hands with Our **REDO** Chain!!!

Founded in 2020, **REDO Skill Maturing Workshop**, the name itself has its solution which was started to recycle your skills which you left as it was some days ago. You cannot get your wasted time back, but you can get another chance to redo your process of implementing your dream work from now and with us to grow logically even more than better and stronger. We **never try to educate** our candidate's mind **by commanding, grading or by triggering their mind by promising for fake placements**. Rather we create passion on the work, **we make them understand "why they came to us, what they learn from and how can they make money out of it" if they spend their valuable time with us.**

Our Secret of Success and Our Strength Is,

"We Never Work for Feedbacks..., We Work for Results…"

Important Things About Us:

- ✓ **Origin(al):** As We represent us as **"A Proud Training Unit of Embuzz Technologies Private Limited"**, We Don't Give Fake Certificates or Support Indiscipline Peoples
- ✓ **Real Coaching / Training Content:** We Don't have Time / Money / Energy Wasting Fake Syllabus
- ✓ **Ability After Coaching / Training:** We Don't Blabber About Placement Assurance, Rather Definitely Make Them Perform Logically and Make Candidates to Decide Their Career in Their Own Way
- ✓ **Our Approach:** We'll be Kind As Well As Aggressive Occasionally At Sessions, Depends On The Candidate's Learning Speed and Capability. **We Focus on Best Results Rather Than Best Feedbacks.** Our Best / Old Book Methods (Punctuality / Neatly Dressed / Notes Making / Communication / Discipline / etc…) Will Look Worst for Inexperienced Candidates but We Definitely Want Them to Follow Our Guidelines Without Any Excuses and Come Out Of Their Insecure Zone Technically As Well As Behaviourally Too To Grow Them Immensely.
- ✓ **We Are Unique and Very Content Specific In Delivering Contents, Definitely Candidates Will Feel While Sessions For Sure.**

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Embedded System and VLSI (Including ROBOTICS / AUTOMATION / SCADA / IOT) Training:

EMB001C:
2/3 Months (8 Hours per week) (Minimum 10 heads/batch) - 12000/-

EMB002C:
2/3 Months (8 Hours per week) (Minimum 10 heads/batch) - 20000/-

EMB003C:
2/3 Months (8 Hours per week) (Minimum 10 heads/batch) - 9000/-

EMB004C:
2/3 Months Training (8 Hours per week) (Minimum 10 heads/batch) - 9000/-

EMB005C:
2/3 Months Training (8 Hours per week) (Minimum 10 heads/batch) - 12000/-

EMB006C:
2/3 Months Training (8 Hours per week) (Minimum 10 heads/batch) - 12000/-

EMB007C:
2/3 Months Training (8 Hours per week) (Minimum 10 heads/batch) – 15,000/-

EMB008C:
3 Months Training (8 Hours per week) (Minimum 10 heads/batch) – 50,000/-

EMB009C:
3 Months Training (8 Hours per week) (Minimum 10 heads/batch) – 15,000/-

***Terms & Conditions Apply**
 # Fees May Decrease as per the Batch Counts and For Multiple Course Crashers
 # Candidate will be trained hands on for atleast 20 projects in each Training Program they do for sure.

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EMB001C - AVR 70 HOURS SYLLABUS

Task	Theory (10 Hours)	Hands-On
1-5	Evaluation of Embedded Systems, Introduction of **Embedded C** Programming, Types and Advantages of Embedded systems Application with Real Time examples. Introduction of AVR Architecture, Pipelining, Digital Basics, Pin configuration of ATMEGA16, Register structure of ATMEGA16. AVR Compiler IO Registers in ATMEGA16 What is ' C ' ? Embedded C programming Hardware Interfacing Techniques	WINAVR software Implementation Methodologies LED, Buzzer and My First Project implementation with Trainer kit Execution
6-10	DC Motors, Gear motors, Stepper Motor, Submersible Motor Interfacing Motors interfacing with microcontroller & circuit Motor Interfacing programs Program implementation with Trainer kit	7SEG interfacing theory 7SEG interfacing with microcontroller & circuit 7SEG interfacing program Program implementation with Trainer kit Execution
11-20	Switch interfacing theory Key interfacing with microcontroller & circuit Keypad interfacing program Program implementation with Trainer kit Execution	Relay interfacing theory Relay interfacing with microcontroller & circuit Relay interfacing program Program implementation with Trainer kit Execution
21-30	Various Sensor Devices interfacing theory Sensor interfacing with microcontroller & circuit Sensor Controlling programs Program implementation with Trainer kit Execution	LCD interfacing theory LCD interfacing with microcontroller & circuit LCD interfacing program Program implementation with Trainer kit Execution
31-40	Serial Communication interfacing theory RS232 interfacing with microcontroller & circuit Bluetooth interfacing program Zigbee interfacing program GSM interfacing program	ADC interfacing theory ADC interfacing with microcontroller & circuit Temperature Sensor interfacing program Bump Sensor interfacing program Current Sensor interfacing program

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EMB002C - ARM 70 HOURS SYLLABUS

Task	Theory (10 Hours)	Hands-On
1-5	Evaluation of Embedded Systems, Introduction of **Embedded C** Programming, Types and Advantages of Embedded systems Application with Real Time examples. Introduction of ARM Architecture, Pipelining, Digital Basics, Pin configuration of LPC2148, Register structure of LPC2148. ARM Compiler IO Registers in LPC2148 What is ' C ' ? Embedded C programming Hardware Interfacing Techniques	KEIL Compiler FLASH Magic Implementation Methodologies LED, Buzzer, 7SEG and My First Project implementation with Trainer kit Execution
6-10	DC Motors, Gear motors, Stepper Motor, Submersible Motor Interfacing Motors interfacing with microcontroller & circuit Motor Interfacing programs Program implementation with Trainer kit	Relay interfacing theory Relay interfacing with microcontroller & circuit Relay interfacing program Program implementation with Trainer kit Execution
11-20	Switch interfacing theory Key interfacing with microcontroller & circuit Keypad interfacing program Program implementation with Trainer kit Execution	Various Sensor Devices interfacing theory Sensor interfacing with microcontroller & circuit Sensor Controlling programs Program implementation with Trainer kit Execution
21-30	LCD interfacing theory LCD interfacing with microcontroller & circuit LCD interfacing program Program implementation with Trainer kit Execution	Serial Communication interfacing theory RS232 interfacing with microcontroller & circuit Bluetooth interfacing program Zigbee interfacing program GSM interfacing program
31-40	RTC interfacing theory RTC interfacing with microcontroller & circuit RTC interfacing program Program implementation with Trainer kit Execution	ADC interfacing theory ADC interfacing with microcontroller & circuit Temperature Sensor interfacing program Bump Sensor interfacing program Current Sensor interfacing program

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EMB003C - PIC 70 HOURS SYLLABUS

Task	Theory (10 Hours)	Hands-On
1-5	Evaluation of Embedded Systems, Introduction of **Embedded C** Programming, Types and Advantages of Embedded systems Application with Real Time examples. Introduction of PIC Architecture, Pipelining, Digital Basics, Pin configuration of 16F Series, Register structure of 16F Series. AVR Compiler IO Registers in 16F Series What is ' C ' ? Embedded C programming Hardware Interfacing Techniques	CCS Compiler Implementation Methodologies LED, Buzzer and My First Project implementation with Trainer kit Execution
6-10	DC Motors, Gear motors, Stepper Motor, Submersible Motor Interfacing Motors interfacing with microcontroller & circuit Motor Interfacing programs Program implementation with Trainer kit	7SEG interfacing theory 7SEG interfacing with microcontroller & circuit 7SEG interfacing program Program implementation with Trainer kit Execution
11-20	Switch interfacing theory Key interfacing with microcontroller & circuit Keypad interfacing program Program implementation with Trainer kit Execution	Relay interfacing theory Relay interfacing with microcontroller & circuit Relay interfacing program Program implementation with Trainer kit Execution
21-30	Various Sensor Devices interfacing theory Sensor interfacing with microcontroller & circuit Sensor Controlling programs Program implementation with Trainer kit Execution	LCD interfacing theory LCD interfacing with microcontroller & circuit LCD interfacing program Program implementation with Trainer kit Execution
31-40	Serial Communication interfacing theory RS232 interfacing with microcontroller & circuit Bluetooth interfacing program Zigbee interfacing program GSM interfacing program	ADC interfacing theory ADC interfacing with microcontroller & circuit Temperature Sensor interfacing program Bump Sensor interfacing program Current Sensor interfacing program

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EMB004C - ARDUINO 70 HOURS SYLLABUS

Task	Theory (10 Hours)	Hands-On
1-5	Evaluation of Embedded Systems, Introduction of **Embedded C** Programming, Types and Advantages of Embedded systems Application with Real Time examples. Introduction of ARDUINO Architecture, Pipelining, Digital Basics, Pin configuration of ATMEGA328, Register structure of ATMEGA328. AVR Compiler IO Registers in 16F Series What is ' C ' ? Embedded C programming Hardware Interfacing Techniques	ARDUINO IDE Implementation Methodologies LED, Buzzer and My First Project implementation with Trainer kit Execution
6-10	DC Motors, Gear motors, Stepper Motor, Submersible Motor Interfacing Motors interfacing with microcontroller & circuit Motor Interfacing programs Program implementation with Trainer kit	7SEG interfacing theory 7SEG interfacing with microcontroller & circuit 7SEG interfacing program Program implementation with Trainer kit Execution
11-20	Switch interfacing theory Key interfacing with microcontroller & circuit Keypad interfacing program Program implementation with Trainer kit Execution	Relay interfacing theory Relay interfacing with microcontroller & circuit Relay interfacing program Program implementation with Trainer kit Execution
21-30	Various Sensor Devices interfacing theory Sensor interfacing with microcontroller & circuit Sensor Controlling programs Program implementation with Trainer kit Execution	LCD interfacing theory LCD interfacing with microcontroller & circuit LCD interfacing program Program implementation with Trainer kit Execution
31-40	Serial Communication interfacing theory RS232 interfacing with microcontroller & circuit Bluetooth interfacing program Zigbee interfacing program GSM interfacing program	ADC interfacing theory ADC interfacing with microcontroller & circuit Temperature Sensor interfacing program Bump Sensor interfacing program Current Sensor interfacing program

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EMB005C – ESP Series 70 HOURS SYLLABUS

Week 1: Introduction to ESP32 & Basics (10 hours)

1. **Introduction to Microcontrollers and IoT (2 hours)**
   - Overview of microcontrollers and IoT
   - Importance of ESP32 in IoT
   - Differences between ESP32 and other microcontrollers
2. **Setting Up the Development Environment (1 hour)**
   - Installing Arduino IDE and ESP32 board support
   - Introduction to ESP32 toolchain and libraries
3. **Getting Started with ESP32 (3 hours)**
   - Overview of ESP32 hardware: pins, GPIO, flash, memory, etc.
   - Basic ESP32 architecture
   - Writing the first "Blink" program (LED blink using GPIO)
   - Understanding digital IO in ESP32
4. **Basic Programming Concepts (4 hours)**
   - GPIO pin modes and handling
   - Digital reads and writes
   - Analog input/output with ESP32
   - PWM (Pulse Width Modulation) and controlling brightness of LEDs
   - Debouncing switches

Week 2: Communication Protocols and Peripherals (12 hours)

1. **Serial Communication and Debugging (2 hours)**
   - Using Serial Monitor for debugging
   - Using Serial.println and debugging strategies
   - Introduction to UART, SPI, and I2C communication
2. **I2C and SPI Communication (4 hours)**
   - Introduction to I2C and SPI protocols
   - Interfacing with I2C devices (e.g., sensors, displays)
   - Interfacing with SPI devices (e.g., SD cards, sensors)
3. **Using External Sensors (4 hours)**
   - Interfacing temperature and humidity sensors (e.g., DHT11/DHT22, BMP180)
   - Using analog sensors (e.g., photoresistor, potentiometer)
   - Sensor data acquisition, calibration, and visualization

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Week 3: Advanced Communication Protocols (10 hours)

1. **Wi-Fi and Networking (4 hours)**
   - Introduction to Wi-Fi on ESP32
   - Setting up Wi-Fi connections (station, access point mode)
   - Connecting ESP32 to local networks
   - Using ESP32 for basic internet communication (HTTP GET/POST)
2. **Bluetooth Low Energy (BLE) (3 hours)**
   - Introduction to Bluetooth Low Energy (BLE)
   - Setting up BLE server and client on ESP32
   - Communicating with BLE devices (e.g., smartphones, sensors)
3. **MQTT Protocol for IoT Communication (3 hours)**
   - Introduction to MQTT
   - ESP32 as MQTT client
   - Sending and receiving sensor data using MQTT
   - Integrating with cloud platforms like ThingSpeak

Week 4: Web Development and Cloud Integration (14 hours)

1. **Building a Web Server with ESP32 (4 hours)**
   - Setting up a basic web server on ESP32
   - Serving HTML pages and controlling GPIO from a web interface
   - Sending sensor data to a web page
2. **ESP32 WebSocket Server (2 hours)**
   - Introduction to WebSockets
   - Setting up a WebSocket server on ESP32
   - Real-time communication with ESP32 through WebSocket
3. **IoT with Cloud Services (ThingSpeak, Adafruit IO) (4 hours)**
   - Introduction to ThingSpeak and Adafruit IO
   - Sending sensor data to cloud platforms
   - Displaying data on cloud dashboards
   - Real-time cloud updates
4. **Web-Based User Interface for ESP32 (4 hours)**
   - Creating a user interface with HTML and JavaScript
   - Hosting a simple control page to interact with ESP32
   - Sending commands from a web interface to control peripherals

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Week 5: Advanced ESP32 Features and Projects (14 hours)

1. **Low Power Modes and Power Management (4 hours)**
   - Understanding the low-power capabilities of ESP32

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- Deep sleep, light sleep, and other power-saving modes
- Implementing power-efficient designs in IoT projects

2. **Real-Time Clock (RTC) and Timers (2 hours)**
   - Using the onboard RTC for timekeeping
   - Setting up an external RTC module (e.g., DS3231)
   - Using timers for periodic tasks
3. **Advanced Sensor Integration (4 hours)**
   - Integrating sensors for air quality (e.g., MQ series)
   - Connecting and interfacing with GPS modules
   - Data logging to SD cards
4. **Project: Home Automation System (4 hours)**
   - Using ESP32 to control home appliances (lights, fans, etc.)
   - Building a smart home web interface
   - Integrating sensors for temperature, humidity, motion detection

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Week 6: Advanced IoT Applications (10 hours)

1. **Building an IoT System for Smart Agriculture (5 hours)**
   - Using ESP32 to monitor soil moisture, temperature, and humidity
   - Automated irrigation systems
   - Data visualization using cloud services (ThingSpeak, Blynk)
2. **ESP32 Camera Module (ESP32-CAM) (5 hours)**
   - Overview of ESP32-CAM and camera module
   - Capturing images and videos with ESP32-CAM
   - Streaming video to a web server (MJPEG streaming)

Week 7: Final Projects and Applications (10 hours)

1. **Final Project (5 hours)**
   - **Building a comprehensive IoT project using ESP32**
   - **Options for projects:**
     - Smart home automation
     - Environmental monitoring system
     - Security system with sensors and cameras
     - Remote control for appliances via web or mobile app
2. **Project Presentation and Troubleshooting (5 hours)**
   - Final testing and debugging
   - Optimizing the system for performance and power efficiency
   - Project presentation, demonstration, and Q&A

EMB007C – STM32 70 HOURS SYLLABUS

Week 1: Introduction to STM32 & Basics (10 hours)

1. **Introduction to Microcontrollers and STM32 (2 hours)**
   - Overview of microcontrollers and their applications
   - STM32 family: Introduction to STM32 microcontrollers (F0, F1, F3, F4, F7, L4, etc.)
   - STM32 vs other microcontrollers (e.g., Arduino, ESP32)
   - STM32 architecture and features
2. **Setting Up the Development Environment (2 hours)**
   - Installing STM32CubeIDE and STM32CubeMX
   - Installing necessary toolchains and drivers
   - Overview of STM32CubeMX for configuration and initialization
3. **Getting Started with STM32: First Program (3 hours)**
   - Writing the first "Blink" program (LED blink using GPIO)
   - Understanding STM32 pinout and GPIO configuration
   - STM32 HAL (Hardware Abstraction Layer) and direct register access
   - Debugging with STM32CubeIDE and using breakpoints
4. **Basic Programming Concepts (3 hours)**
   - GPIO pin modes (input, output, alternate function, analog)
   - Digital read/write, setting up and using interrupts
   - PWM (Pulse Width Modulation) on STM32
   - Using timers for time-based tasks

Week 2: Peripherals and Communication Protocols (12 hours)

1. **Serial Communication (USART) (3 hours)**
   - Introduction to UART/USART on STM32
   - Setting up UART for serial communication
   - Writing and reading data over UART
   - Using the STM32CubeMX tool for USART configuration
2. **I2C and SPI Communication (4 hours)**
   - Introduction to I2C and SPI protocols on STM32
   - Interfacing with I2C devices (e.g., sensors, displays)
   - Interfacing with SPI devices (e.g., SD cards, sensors)
   - Using STM32CubeMX for I2C/SPI peripheral configuration
3. **Timers and Interrupts (3 hours)**
   - Overview of STM32 timers (basic, advanced control, general purpose)
   - Timer interrupts and their applications
   - Configuring timer interrupts for periodic tasks

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- Using PWM with timers

4. **Basic ADC and DAC (2 hours)**
   - Introduction to Analog-to-Digital Conversion (ADC) in STM32
   - Reading sensor data using ADC
   - Basic Digital-to-Analog Conversion (DAC) output
   - Using DMA (Direct Memory Access) for ADC/DAC

Week 3: Advanced Peripherals & Networking (12 hours)

1. **Advanced ADC and DAC (3 hours)**
   - Continuous and scan mode for ADC
   - Using ADC with DMA for efficient data acquisition
   - Configuring DAC for signal generation
2. **Direct Memory Access (DMA) (3 hours)**
   - Introduction to DMA and its importance for performance
   - Configuring DMA for ADC, SPI, UART, and other peripherals
   - Using DMA for efficient data transfer and system optimization
3. **Ethernet and TCP/IP Communication (2 hours)**
   - Setting up Ethernet on STM32 using the LwIP stack
   - Basic TCP/IP server/client communication
   - Introduction to networked applications with STM32 (e.g., HTTP server)

Week 4: Advanced Projects & IoT (14 hours)

1. **Wireless Communication (Wi-Fi & Bluetooth) (4 hours)**
   - Setting up Wi-Fi communication with STM32 (using external modules like ESP8266)
   - Introduction to Bluetooth Low Energy (BLE) with STM32
   - Using STM32 with external wireless modules for IoT applications
2. **SD Card Interface (3 hours)**
   - Interfacing STM32 with an SD card using SPI or SDIO
   - Writing and reading files from an SD card
   - Using an SD card for data logging applications
3. **Building IoT Projects with STM32 (5 hours)**
   - Integrating sensors (e.g., temperature, humidity) with STM32
   - Sending sensor data to the cloud (e.g., ThingSpeak, MQTT)
   - Web-based interfaces for STM32 (using an external web server)
   - Cloud integration (IoT communication with MQTT or HTTP)
4. **Power Management and Low Power Modes (2 hours)**
   - Introduction to STM32 power modes (Sleep, Stop, Standby)
   - Configuring STM32 for low-power applications

- Power consumption optimization techniques for IoT devices

Week 5: Real-Time Systems & Embedded Systems Design (12 hours)

1. **Designing Real-Time Systems with STM32 (4 hours)**
   - Introduction to real-time systems and their constraints
   - STM32 real-time capabilities and features (interrupt handling, timers)
   - Optimizing interrupt-driven designs
2. **Advanced Timer Usage & Real-Time Clock (RTC) (3 hours)**
   - Advanced timer configurations for complex time-based tasks
   - Setting up and using the Real-Time Clock (RTC) for timekeeping applications
   - Synchronization of time in embedded systems
3. **Debugging and Performance Optimization (3 hours)**
   - Using STM32CubeIDE debugging tools (breakpoints, watchpoints, variable inspection)
   - Profiling and optimizing embedded applications
   - Using performance monitoring tools for STM32
4. **Project: Embedded System Design (2 hours)**
   - Design an embedded system from the ground up
   - Application of hardware interfaces (GPIO, UART, I2C, etc.)
   - Creating an embedded system with real-time constraints

Week 6: Advanced IoT & Final Projects (10 hours)

1. **Wireless IoT Applications (4 hours)**
   - Creating an IoT project with STM32 using wireless communication (Wi-Fi, BLE)
   - Integration of external wireless modules (ESP8266, nRF24L01, etc.)
   - Sending data to cloud platforms (like ThingSpeak, Blynk, AWS IoT)
2. **Advanced IoT Systems (Cloud Integration, Web Servers) (4 hours)**
   - Designing IoT systems with STM32 and cloud communication
   - Web server hosting on STM32 (using external modules like ESP8266)
   - Cloud-based data visualization and control
3. **Project: Advanced IoT System (Final Project) (2 hours)**
   - Developing an advanced IoT project (e.g., smart home, smart agriculture, or environmental monitoring)
   - Integrating multiple sensors and communication protocols (Wi-Fi, MQTT)
   - Final presentation and troubleshooting

EMB008C – VLSI FPGA 70 HOURS SYLLABUS

WEEK 1: Introduction to VLSI (Very-Large-Scale Integration) and Digital Design (10 hours)

- ✓ Understanding VLSI and its role in modern electronics
- ✓ Evolution of VLSI: SSI, MSI, LSI, VLSI, and ULSI
- ✓ VLSI design flow overview
- ✓ Key VLSI design tools (CAD tools, synthesis tools, simulation tools)
- ✓ Introduction to CMOS technology (CMOS logic gates, CMOS scaling, etc.)

Fundamentals of Digital Design

1. Introduction to Digital Design:
    - Number systems, binary arithmetic.
    - Boolean algebra and logic gates.
    - Combinational vs. sequential logic.
2. Combinational Circuits:
    - Multiplexers, demultiplexers, encoders, decoders.
    - Adders and subtractors (half, full).
3. Sequential Circuits:
    - Flip-flops (SR, D, JK, T).
    - Counters and shift registers.
    - Memory elements (RAM/ROM basics).
4. Design Optimization Techniques:
    - Karnaugh maps (K-Maps) and Quine-McCluskey methods.
    - Gate-level minimization.

Week 2: Basics of Verilog (10 hours)

1. Introduction to Verilog (2 hours)
    - Number systems, binary arithmetic.
    - Overview of Verilog HDL (Hardware Description Language)
    - Verilog syntax and structure
    - Module definition in Verilog
    - Data types in Verilog (wire, reg, integer, real)
    - Assignments in Verilog (continuous vs procedural assignments)
2. Combinational Logic Design in Verilog (4 hours)
    - Basic gates in Verilog: and, or, not, nand, nor, xor, xnor
    - Design of basic combinational circuits: Half adder, full adder, multiplexer, decoder, encoder
    - Structural and behavioral modeling in Verilog
    - Conditional statements in Verilog (if, case, else)

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3. Sequential Logic Design in Verilog (4 hours)
    - Flip-flops and registers (D, T, JK, SR flip-flops)
    - Shift registers and their Verilog implementation
    - Counters: Synchronous vs Asynchronous counters
    - FSM (Finite State Machine) design using Verilog
    - Moore vs Mealy machines
    - State transitions and encoding

Week 3 and Week 4: Advanced Verilog Concepts (20 hours)

1. **Verilog Operators and Constructs (4 hours)**
    - Logical and arithmetic operators in Verilog
    - Verilog data types: wire, reg, integer, real, time
    - always, initial, and forever blocks in Verilog
    - Task and function definition in Verilog
    - Delays and event control in Verilog (#, @)
2. **Design Hierarchy and Modularity (3 hours)**
    - Structural modelling: Instantiating modules
    - Top-down vs bottom-up design
    - Verilog generate constructs
    - Verilog parameters and local parameters
    - Configuration and conditional compilation in Verilog
3. **Testbenches and Simulation (3 hours)**
    - Creating testbenches in Verilog
    - Stimulus generation for testbenches
    - Using initial and always blocks in testbenches
    - Aboud Verilog simulation tools (ModelSim, XSIM, Vivado Simulator)
    - Writing and analyzing waveforms and test results

Week 5 and WEEK 6: FPGA Design Flow and Toolchain (20 hours)

1. **FPGA Design Flow (3 hours)**
    - Overview of FPGA design flow: Synthesis, implementation, simulation, and debugging
    - Creating FPGA projects in Vivado / Quartus
    - Constraints and timing analysis in FPGA design
    - Programming and debugging FPGA designs
2. **Synthesis and Implementation in FPGA (4 hours)**
    - Verilog synthesis process: From RTL to gate-level
    - Constraints in FPGA design (pin assignment, clock constraints)
    - Optimizing designs for area, speed, and power

- Place and route: How FPGA tools map logic onto FPGA resources

3. **FPGA Debugging and Simulation (3 hours)**
   - Using simulation tools for debugging FPGA designs
   - In-system debugging with logic analyzers and integrated debugging tools
   - Working with virtual I/O (VIO) and integrated logic analyzers in Vivado
   - Timing constraints and static timing analysis

Week 7 and WEEK 8: Designing with FPGA(20 hours)

1. **Implementing Digital Designs on FPGA:**
   - Mapping Verilog code to FPGA.
   - Configuring I/O pins.
2. **Clocking Resources:**
   - Clock generation and distribution.
   - PLLs and clock management.
3. **Interfacing Peripherals:**
   - UART, SPI, and I2C basics.
   - Adding peripheral controllers using HDL.
4. **Common FPGA Design Examples:**
   - Simple calculator.
   - Traffic light controller.
   - Digital stopwatch.

EMB009C – CORPORATE COMMUNICATION PROGRAM 70 HOURS SYLLABUS

BASIC

1. 8 Parts of Speech Definition
2. Noun, Pronoun, Verb
3. Components of a sentence
4. Types of Sentence Structure
5. Types of Sentences
6. Conjunction
7. Preposition
8. Articles
9. Tenses

INTERMEDIATE

1. Adjective, Adverb [Basic]
2. Preposition & Conjunction [Detail]
3. Direct & Indirect Speech

ADVANCE

1. Complex Sentences
2. Tenses
3. Active & Passive Voice

TECHNICAL ADDITIONALS:

1. Vocabulary [Synonyms & Antonyms]
2. Phrasal Verbs
3. Phrases

NON - TECHNICAL ADDITIONAL:

1. Speech [Prepared & Non - Prepared]
2. Listening [Speed Writing]
3. Email writing
4. Book Reading [Synonyms & Antonyms Findings]
5. Translation
6. Mock Interviews
7. Interpersonal Skills

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SYLLABUS FOR JAVA

MODULE-1 (10 Hrs)
INTRODUCTION TO JAVA
Features of Java
JDK and JRE
Program structure and Syntax
Setting up Development Environment (Eclipse/VS code/IntelliJ).

JAVA FUNDAMENTALS
Data Types, Variables and Literals
Operators and its Expressions
Type Casting/Type Conversion
Control Statements: if-else, Switch, else-if ladder
Looping Statements: for, While, do-while
Arrays and Multidimensional arrays.

MODULE-2 (9 Hrs)
STRING HANDLING
String Class and Methods
StringBuffer and StringBuilder
String Manipulation and Formatting
EXCEPTION HANDLING
Types of Exceptions: Checked Vs Unchecked
try, catch, finally, throw and throws
Custom Exceptions

MODULE-3 (11 Hrs)
OOP IN JAVA
Classes and Objects: Constructors, Methods, 'this' keyword
Encapsulation
Inheritance: 'super' keyword, Method overloading and overriding
Polymorphism: Compile time Vs Runtime
Abstraction: Abstract classes and Interfaces.

MODULE-4 (9 Hrs)
MULTITHREADING AND CONCURRENCY
Thread class and Runnable Interface
Thread Lifecycle and Methods
Synchronization and Inter-thread Communication
Executors and Concurrency Utilities.

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MODULE-5 (6 Hrs)
FILE HANDLING
File I/O using ‘File’,’FileReader’,’FileWriter’
Buffered Streams and Serialization
New I/O: Channels and Buffers
Stream API.

FLIPPED CLASS 25
TOTAL 70

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SYLLABUS FOR PYTHON

COURSE CONTENT

MODULE-1 7Hrs

INTRODUCTION TO PYTHON

Python role in programming and industries

Installing Python and setting up the environment(IDLE, VS Code, Jupyter)

Variables, Datatypes, and Type casting

Input and Output in Python.

MODULE-2 8Hrs

CONTROL STRUCTURES

Conditional Statements: if, if-else and nested if-else statements

Operators and its Expressions

Looping statements: for, while and Nested loops.

Iterating over sequences(strings, lists, etc.,)

MODULE-3 12Hrs

OOP WITH PYTHON

Classes and objects

Methods, attributes and the 'self' parameter

Constructor and Destructor

Inheritance, Polymorphism and Encapsulation

Method Overloading and Overriding

Abstract classes and Interfaces.

MODULE-4 10Hrs

FUNCTIONS

Defining and Calling functions

Arguments and return values

Lambda functions.

MODULES AND PACKAGES

Built-in modules(os, math, random)

Creating and importing User defined modules

Introduction to pip and External packages.

MODULE-5 8Hrs

DATA STRUCTURES IN PYTHON

Strings, Lists, Tuples.

Sets and Dictionaries.

EXCEPTION HANDLING

try, except and finally blocks

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Raising exceptions.

FILE HANDLING

Working with CSV and JSON files.

FLIPPED CLASS 25

TOTAL 70

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