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# Advanced Diploma in Embedded & Automotive Systems

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## ADVANCED C PROGRAMMING

Introduction to C programming in Linux  
C Tokens  
Precedence and Associativity  
Escape sequence in C  
Hashing  
Functions in C  
Void pointer, Null pointer, Wild pointer, Dangling pointer  
Function pointers & Callback function  
Structure, Union & enums  
Dynamic Memory Allocation  
Data segments in C  
Data Structures  
Linked List  
Binary Tree and Binary Search Tree  
Stack implementation  
Preprocessors & Macros  
Typedef  
Command Line Arguments  
File Handling

## ADVANCED C++ PROGRAMMING

Constants/Literals  
Pointers in C++  
Dynamic Memory Allocation in C++  
Object Oriented Programming  
Concept & Class  
Constructors & Destructors  
Structs  
Friend functions & Friend classes  
Inheritance  
Polymorphism  
Abstraction  
Exceptions

## AUTOSAR

Introduction to Autosar  
Base Software (BSW)  
Software Components  
Ports & Interfaces  
Compositions & Connectors  
Runnable & Events  
Application Software Components (ASW)  
Run Time Environment (RTE)  
Autosar Methodology

## PYTHON PROGRAMMING & GUI DEVELOPMENT

Introduction To Python  
Comprehensions  
Python Functions  
Object Oriented Features  
File Handling  
GUI Development  
Configuring peripherals with in Raspberry Pi

## MICROCONTROLLERS & MICROPROCESSORS

ARM - ARM7 & ARM Cortex  
PIC Microcontroller  
AVR Atmega 128

## COMMUNICATION PROTOCOLS

CAN, I2C, SPI, USART

## REAL WORLD INTERFACING

Bluetooth, GSM, GPS, RFID, Thermal Printer  
ESP, Zigbee, LCD, Keypad, Stepper Motor

## SINGLE BOARD COMPUTERS

Raspberry Pi & Beagle Bone Black

## RTOS - REAL TIME OPERATING SYSTEM

Micrium UcOS2

## EMBEDDED NETWORKING

TCP/IP & UDP Socket Programming using  
Linux System Calls

## IOT - INTERNET OF THINGS

ESP8266, Cayenne, Think Speak

## EMBEDDED LINUX & DEVICE DRIVERS

Linux Internals  
System Programming  
Device Drivers

## ROBOTICS

## PCB DESIGNING

## INTERNSHIP PROJECT



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