

COURSE SYLLABUS

Name of the Group: *Embedded System Group*

Name of the Course: *Certificate Course on Embedded Linux and Porting on ARM Board*

Course Code: *ED502*

Starting Date: *23rd September 2019*

Duration: *4 Weeks (140 Hours)*

Course Description

Introduction

Basic Operating System Concepts, Linux as Embedded Operating System, Comparison of Embedded OS, Embedded OS Tools and Development, Discussion on Embedded OS Applications and Products.

System architecture of a Basic OS

Internals of Linux OS, System Calls, Linux Compiler options, Process, Multithreading and Synchronization, Serial port and Network programming, Kernel module programming and Device drivers

Inter Process Communication

Pipe and FIFOs, Shared memory, Sockets

Getting Linux on a device

Linux boot sequence, Building Kernel, Building Boot image

Porting OS on ARM board

Building root file system, Kernel Compilation for ARM, Porting of OS to ARM board

Practical Sessions

Embedded Linux Applications and Porting on ARM

Learning Outcomes

After successful completion of the module, the students shall be able to:

- Implement Embedded systems with Embedded operating systems
- Develop applications with Embedded Linux
- Port the OS with applications on ARM

Reading List

1. GNU/LINUX Application Programming, Jones, M Tims
2. Embedded Linux: Hardware, Software, and Interfacing, Hollabaugh, Craig,
3. Building Embedded Linux Systems: Yaghmour, Karim

4. Embedded Software Primer: Simon, David E.
5. Linux Kernel Internals: Beck, Michael At Al
6. UNIX Network Programming : Steven, Richard
7. Linux: The Complete Reference: Petersen, Richard
8. Linux Device Drivers: Rubini, Alessandro, Corbet, Jonathan
9. Linux Kernel Programming: Algorithms and Structures of version 2.4: Beck, Michael At Al
10. Linux Kernel Development: Love, Robert
11. Operating System Concepts, Peter B. Galvin, Abraham Silberschatz, Gerg Gagne, Wiley Publishers
12. Embedded/Real-Time Systems: Concepts, Design and Programming: The Ultimate Reference, Dr. K.V.K.K. Prasad, Published by Wiley DreamTech, 2003
13. ARM System Developer's Guide - Designing and Optimizing System Software by: Andrew N Sloss, Dominic Symes, Chris Wright; 2004, Elseiver.
14. ARM Reference manual.