

K L University
Department of Electronics & Computer Engineering
M.Tech (Embedded Systems)

Course No. : 15-EM5208
Course Title : Linux System Concepts
Course Structure : 3-0-2

SYLLABUS:

UNIT1

GNU Development tools: Compilation tools and its functionalities, Debugging applications, Using Make, Creating Libraries.

UNIT – II

Operating Systems Concepts: Structure of Linux Operating System, Process Management, Memory Management, File System Management, I/O Management, Networking Subsystem.

UNIT – III

Introduction Linux Kernel: Linux installation, partitioning, Compilation of open sources, Configuration & Compilation of kernel sources, Kernel modules, Implementing System Calls.

UNIT – IV

Linux Kernel Concepts: The proc file system, Unified Device Model and systems, Memory Management and Allocation, User and Kernel Space communication, Interrupt Handling. Kernel Debugging.

UNIT – V:

Linux Device drivers:, Skeleton of device drivers, Character Driver, Block Drivers, Building driver into the kernel

Networking in Linux: Sockets, a sample example

Text Books:

1. Programming Embedded Systems, 2nd Edition With C and GNU Development Tools by Michael Barr, Anthony Massa.
2. Michael Beck (1998), “Linux Kernel Internals”, Addison Wealey
3. Doug Abbott. (2003), “Linux for Embedded and Real time Applications”, Newnes publishers.

Reference Books:

1. Understanding the Linux Kernel, Third Edition Daniel P. Bovet , Marco Cesati, 3rd edition, Orally Publications
2. Linux Device Drivers, 3rd edition, Linux Device Drivers, 3rd Edition Jonathan Corbet, Alessandro Rubini , Greg Kroah-Hartman, Orally Publications
3. Advanced Programming in UNIX Environment– Richard Stevens, Addison-Wesley, 1992.
4. Linux Kernel Development, Robert Love, 2nd Edition, 2006, Pearson Education.

Project Based Lab: The students will do five basic experiments to gain the knowledge and hands on experience with Linux environment and then develop an application using Reseberry PI by porting Linux OS.