

Course Code	Course Title	L	T	P	C
1156EC413	FUNDAMENTALS OF LINUX DEVICE DRIVERS	0	0	0	2

**a) Course Category**

Independent Learning – Self Learning Course

**b) Preamble**

This course aims to provide a fundamental knowledge about what is a Linux device driver, its Characteristics, and its components such as Linux kernel, modules, major and minor numbers, symbols, Linux data structure and linked lists.

**c) Prerequisite**

Nil

**d) Related Courses**

Linux Programming and Scripting

**e) Course Outcomes**

On successful completion of this course, students will be able to

CO Nos.	Course Outcomes	Knowledge Level (Based on Revised Bloom's Taxonomy)
CO1	Explain the Architecture of Linux, Device drivers and its characteristics	K2
CO2	Describe the various modules of Linux kernel.	K2
CO3	Explain the fundamentals of major and minor numbers of kernel and device numbers	K2
CO4	Describe the symbols in Linux and module parameter.	K2
CO5	Discuss the data structures and linked list in Linux	K2

## **f) Course Content**

### **UNIT I Introduction to Linux and Device Drivers**

Introduction to Linux, Features of Linux, Linux kernel version scheme, Architecture of Linux, Role of Device drivers, Characteristics of Device drivers, System memory, Classification of Device and Modules

### **UNIT II Linux Kernel**

Kernel sub system, Role of Linux kernel, A split view of Linux kernel, kernel modules and types, Hello world module, Building and running kernel modules, kernel module vs user application, loading, listing and unloading kernel modules, kernel configuration

### **UNIT III Major and minor numbers**

Introduction to major and minor numbers, Representation of device numbers, allocating device numbers, Adding and removing device driver to kernel

### **UNIT IV Symbol in Linux and module parameters**

Export symbol, kernel symbol table, undefined symbol error, symbol types, module parameter-array module parameter

### **UNIT V Data structures and Linked list**

File operations-Open method, release method-File structure, Inode structure, Inode numbers, Linux linked list, linked list function, traversing linked list

## **g) Learning Resources**

### **Reference Books**

1. <https://www.youtube.com/watch?v=U7QFcpVh248&index=1&list=PL1zwAXk5ZrWKxLyCq73lzFn3oSLruM750>
2. <http://www.tutorialsdaddy.com/courses/linux-device-driver/>
3. [https://www.youtube.com/watch?v=\\_8ZV-ISVs38](https://www.youtube.com/watch?v=_8ZV-ISVs38)