



C-DAC & Gujarat Technological University
M.E. Electronics & Communication Engineering
(VLSI & Embedded Systems Design)
Gandhinagar

Semester – II

2725208: Device Drivers- I (Elective II & III)

UNIT I– Introduction

Embedded System Architecture fundamentals. Hardware and Software abstraction models. Operating Systems fundamentals. Real time OS overview.

UNIT II- RTOS Fundamentals

Study of Real time OS principles and requirements. Application specific requirements. Throughput and latency requirements. Schedulers, tasks and processes. Memory management. Code and footprint optimization. Study of current and emerging RTOS.

UNIT III - OS internals and Kernels

Internal components of Operating systems. Study, compare and contrast of various OS platforms. Unix/Linux kernel fundamentals. I/O devices, file systems and peripheral devices.

UNIT IV - Device drivers

Fundamentals of device drivers, device enumeration and configuration. Data transfer and management mechanisms.

Lab:

Tools used during laboratory works: Keil, Cypress PSoC, Windows Mobile, Linux, VxWorks, Symbian platforms.

- Study and Implementation of RTOS
- Study and Implementation of Kernel modification
- Study and Implementation of Device Driver development

Course Project:

A project of suitable complexity, comprising of program design, coding, compilation and debug must be completed.

References:

Product documentation from ARM (KEIL), Cypress, Windows Mobile, VxWorks, Symbian

- BUS Specifications – Bluetooth, USB, 802.11x
- Standards Specifications – JPEG, MPEG etc. as required

Instructors may recommend additional textbooks or reference material – the subject content is rapidly changing and an up to date text book at the time of the class may be recommended.