

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E. Embedded Systems (Branch Code - 54)

Year – I (Semester – II) (W.E.F. January 2014)

Subject Name: Embedded and Linux Programming (725402)

Course Content:

Sr. No.	Course Content	Hours
1	Embedded C Programming: Basic concepts of programming, Data Types in C, Bit operations and I/O operation, Pointers & Arrays, Structures, Data Structures	10
2	Programming and Run-time Environment: Mixing C and assembly, Basic Compilation Techniques, Compiling, Assembling, Linking, Debugging & Profiling	06
3	I/O Programming & Memory management: Synchronization, transfer rate, latency, Polled waiting loops, interrupt driven I/O, DMA, static and dynamic allocation, shared memory, recursive/reentrant functions	06
4	Linux Kernel Overview: Linux Kernel Overview, Cross compile environment GCC, Tool-chain, Executable and linkable format, Compiling and testing tool chain	07
5	Linux kernel and porting, debugging: Linux kernel architecture, Kernel memory management, Linux boot up sequence, Porting Linux, Linux system services, Boot Loader, Embedded File Systems	15
6	Linux Device Driver: Fundamentals of Device Driver, Device driver architecture, Character device driver, Installing Device Driver, Proc file-system	10
	Total	54

Reference Book:

1. **Embedded Software Primer** by David Simon, 1st Edition, Eighth Impression, Pearson Education, ISBN 9788177581546
2. **Embedded Linux Primer** by Christopher Hallinam, 2nd Edition, Prentice Hall Publication, ISBN 0137017839
3. **Building Embedded Linux Systems** by Karim Yaghmour, O'Reilly Publications, 2nd Edition, ISBN 780596529680
4. **Embedded Real-time Systems Programming** by Sri Ram Iyer and Pankaj Gupta, 1st Edition, Tata Mcgraw-Hill Publishing, ISBN 9780070482845

5. **Fundamentals of Embedded Software: Where C and Assembly meet** by Daniel W lewis, 1st Edition, Prentice hall, ISBN 0130615897
6. **Advanced Linux Programming** by Mark Mitchell, Jeffrey Oldham and Alex Samuel, 1st Edition, New Riders Publications, ISBN 0-7357-1043-0