**GUJARAT TECHNOLOGICAL UNIVERSITY**

**System Design with Embedded Linux**
**SUBJECT CODE: 3716105**

**Type of course:** Elective

**Prerequisite:** NA

**Rationale:**

**Teaching and Examination Scheme:**

| Teaching Scheme | | | Credits | Examination Marks | | | | Total Marks |
|---|---|---|---|---|---|---|---|---|
| L | T | P | C | Theory Marks | | Practical Marks | | |
| | | | | ESE(E) | PA (M) | PA (V) | PA (I) | |
| 3 | 0 | 2 | 4 | 70 | 30 | 30 | 20 | 150 |

**Content:**

| Sr. No. | Content | Total Hrs | % Weightage |
|---|---|---|---|
| **1** | Embedded Linux Vs Desktop Linux, Embedded Linux Distributions | | |
| **2** | Embedded Linux Architecture, Kernel Architecture – HAL, Memory manager, Scheduler, File System, I/O and Networking subsystem, IPC, User space, Start-up sequence | | |
| **3** | Board Support Package<br>Embedded Storage: MTD, Architecture, Drivers, Embedded File System<br>Embedded Drivers: Serial, Ethernet, I2C, USB, Timer, Kernel Modules | | |
| **4** | Porting Applications<br>Real-Time Linux: Linux and Real time, Programming, Hard Real-time Linux | | |
| **5** | Building and Debugging: Kernel, Root file system Embedded Graphics | | |
| **6** | Case study of uClinux | | |

**Reference Books:**


1. Karim Yaghmour, “Building Embededd Linux Systems”, O'Reilly & Associates
2. P Raghvan, Amol Lad, SriramNeelakandan, “Embedded Linux System Design and Development”, Auerbach Publications
3. Christopher Hallinan, “Embedded Linux Primer: A Practical Real World Approach”, Prentice Hall, 2nd Edition, 2010.
4. Derek Molloy, “Exploring BeagleBone: Tools and Techniques for Building with Embedded Linux”, Wiley, 1st Edition, 2014

**Course Outcome:**

After learning the course the students should be able to:

1. Familiarity of the embedded Linux development model
2. Write, debug, and profile applications and drivers in embedded Linux
3. Understand and create Linux BSP for a hardware platform