

**I Year I Semester**  
**Code: 17ES135**

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**EMBEDDED COMPUTING**  
**(ELECTIVE-II)**

**UNIT-I:**

**Programming on Linux Platform:**

System Calls, Scheduling, Memory Allocation, Timers, Embedded Linux, Root File System, Busy Box.

**Operating System Overview:** Processes, Tasks, Threads, Multi-Threading, Semaphore, Message Queue.

**UNIT-II: Introduction to Software Development Tools**

GNU GCC, make, gdb, static and dynamic linking, C libraries, compiler options, code optimization switches, lint, code profiling tools.

**UNIT-III: Interfacing Modules**

Sensor and actuator interface, data transfer and control, GPS, GSM module interfacing with data processing and display, OpenCV for machine vision, Audio signal processing.

**UNIT-IV: Networking Basics**

Sockets, ports, UDP, TCP/IP, client server model, socket programming, 802.11, Bluetooth, ZigBee, SSH, firewalls, network security.

**UNIT-V: Intel Architecture 32-bit (IA32) Instruction Set**

Application binary interface, exception and interrupt handling, interrupt latency, assemblers, assembler directives, macros, simulation and debugging tools.

**TEXT BOOKS:**

1. Modern Embedded Computing –Peter Barry and Patrick Crowley, 1<sup>st</sup> Ed., Elsevier/Morgan Kaufmann, 2012.
2. Linux Application Development - Michael K. Johnson, Erik W. Troan, Addison Wesley, 1998.
3. Assembly Language for x86 Processors by Kip R.Irvine

**REFERENCE BOOKS:**

1. Operating System Concepts by Abraham Silberschatz, Peter B. Galvin and Greg Gagne.
2. Intel® 64 and IA-32 Architectures Software Developer Manuals
3. The Design of the UNIX Operating System by Maurice J. Bach Prentice-Hall
4. UNIX Network Programming by W. Richard Stevens.