

GUJARAT TECHNOLOGICAL UNIVERSITY

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

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

Subject Name: Embedded and Microcontroller Programming-Institute Elective II (725406)

Course Content:

Sr. No.	Course Content	Hours
1	Introduction to Processor Architectures: Architecture selection for an embedded application, Characteristics of CISC and RISC architecture, 8 bit CISC Architecture details and Registers for 8051 Microcontroller, Instruction set & Assembly language programming.	14
2	Introduction to Embedded C: Data types and storage, Operators: Arithmetic, Logical, Relational, Control flow operations, Endian-ness and Byte ordering, Structures, arrays, Parameter passing, Pointers: Pointers, Functions, User defined functions, Function calls and returns, Types of Memory: stack, heap, global Type qualifiers: Volatile, Mixed C and Assembly language programming.	20
3	Embedded device programming in C: Input / Output port interface, Keyboard interface, Timer initialization for delay and pulse width modulated wave form generation, Universal Asynchronous Receiver Transmitter initialization with Personal Computer Interface, Writing Interrupt Service Routine for application software	20
	Total	54

Reference Book:

1. **The 8051 Microcontroller and Embedded Systems Using Assembly and C**, Muhammad Ali Mazidi, Rolin McKinlay, Janice Gillispie Mazidi 2nd Edition, Pearson Education
2. **Introduction to Embedded Systems** by Shibu K V, 1st Edition, Tata McGraw Hill
3. **Fundamentals of Embedded Software: Where C and Assembly meet** by Daniel W Lewis, 1st Edition, Prentice hall, ISBN 0130615897
4. **Embedded Software Primer** by David Simon, 1st Edition, Eighth Impression, Pearson Education, ISBN 9788177581546