GUJARAT TECHNOGICAL UNIVERSITY
DIPLOMA IN COMPUTER ENGINEERING

SEMESTER- VI

Subject Name: **Programming with 8051**

Sr. No.	Subject Content	Hrs.
1	**1.0 Microprocessor and Microcontrollers** 1.1 Microprocessors 1.2 Microcontrollers 1.3 Comparison of Microprocessor and Microcontrollers 1.4 4, 8, 16 and 32 bit Microcontrollers	2
2	**2.0 The 8051 Architecture** 2.1 8051 Microcontroller Hardware 2.2 Input/output Pins, Ports and Circuits 2.3 Extended Memory 2.4 Counter and Timers 2.5 Serial Data Input/ Output 2.6 Interrupts	7
3	**3.0 8051 Assembly Language Programming** 3.1 Introduction to 8051 Assembly Programming 3.2 Assembling and running an 8051 Program 3.3 The Program counter and ROM space in the 8051 3.4 8051 Data types and directives 3.5 8051 Flag bits and the PSW register 3.6 8051 Register banks and stack	4
4	**4.0 Jump, Loop and Call Instructions** 4.1 Loop and Jump Instructions 4.2 Call instructions 4.3 Time delay for various 8051 chips	4
5	**5.0 I/O port Programming** 5.1 8051 I/O Programming 5.2 I/O bit manipulation Programming	4

6	**6.0 8051 Addressing Modes** 6.1 Immediate and Register addressing modes 6.2 Accessing memory using various addressing modes 6.3 Bit addressing for I/O and RAM	6
7	**7.0 Arithmetic and Logic unit Instructions** 7.1 Arithmetic Instructions 7.2 Signal number concepts and arithmetic operations 7.3 Logic and compare instructions 7.4 Rotate instruction and data serialization 7.5 Application programs.	7
8	**8.0 8051 Programming in C** 8.1 Data types and time delay in C 8.2 I/O Programming of 8051 in C 8.3 Logic operations in 8051 C 8.4 Data conversion Programs in 8051 C 8.5 Accessing Code ROM space in 8051 C 8.6 Data Serialization using 8051 C	8
	Total	**42**

NOTE:- Following are the minimum experiences required, but the college can do more experiences if possible.

Laboratory Experiences: Hrs.

1. Study of 8051 Trainer Kit   2

2. Running 8051 Programs using Trainer Kit/ Simulation Software   2

3   Simple 8051 Programming Exercises   4

4.   Programming exercises using loop, jump and call instructions   4

5. Programming exercises on I/O port programming   4

6. Programming exercises using arithmetic and logic instructions   4

7. Application Programs   4

8.   8051 Programming exercises in C   4

Total   28

Reference Books:

1. The 8051 Microcontroller and Embedded systems (Second Edition)

    By Mulchandani Ali Mazidi, Jawice Gillisqie Mazidi Rollin D Makinlay
    Pearson Publication
2. The 8051 Microcontroller – Architecture, Programming & Applications

    2nd Edition
    By Kenneth J. Ayala
    Penran International Publishing (I) Pvt. Ltd.