

UNIVERSITY OF MADRAS

B.Sc. DEGREE PROGRAMME IN COMPUTER SCIENCE

SYLLABUS WITH EFFECT FROM 2023-2024

Year: I

Semester: II

Year IV		Semester IV
Introduction to Computer Architecture and Microprocessor Practical		125C21
Credits 5	Lecture Hours:5 per week	
Learning Objectives: (for teachers: what they have to do in the class/lab/field) • To introduce the internal organization of Intel 8085 Microprocessor. • To enable the students to write assembly language programs using 8085. • To interface the peripheral devices to 8085 using Interrupt controller and DMA interface. • To provide real-life applications using microcontroller.		
Course Outcomes: (for students: To know what they are going to learn) CO1: Remember the Basic binary codes and their conversions. Binary concepts are used in Microprocessor programming and provide a good understanding of the architecture of 8085. CO2: Understanding the 8085-instruction set and their classifications, enables the students to write the programs easily on their own using different logic. CO3: Applying different types of instructions to convert binary codes and analysing the outcome. The instruction set is applied to develop programs on multibyte arithmetic operations. CO4: Analyse how peripheral devices are connected to 8085 using Interrupts and DMA controller.		

List of Programs
Addition and Subtraction 1. 8 - bit addition 2. 16 - bit addition 3. 8 - bit subtraction 4. BCD subtraction Multiplication and Division 1. 8 - bit multiplication 2. BCD multiplication 3. 8 - bit division Sorting and Searching 1. Searching for an element in an array. 2. Sorting in Ascending and Descending order. 3. Finding the largest and smallest elements in an array. 4. Reversing array elements. 5. Block move.

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Code Conversion

1. BCD to Hex and Hex to BCD
2. Binary to ASCII and ASCII to binary
3. ASCII to BCD and BCD to ASCII

Applications

1. Square of a single byte Hex number
2. Square of a two-digit BCD number
3. Square root of a single byte Hex number
4. Square root of a two-digit BCD number

TEXT BOOKS:

1. M.M. Mano, “Computer System architecture”. Pearson, Third Edition, 2007
2. R. S. Gaonkar- "Microprocessor Architecture- Programming and Applications with 8085"- 5th Edition- Penram- 2009.
3. Tripti Dodiya & Zakiya Malek, “Computer Organization and Advanced Microprocessors”, Cengage Learning, 2012.

REFERENCE BOOKS:

1. Mathur- “Introduction to Microprocessor”- 3rd Edition- Tata McGraw-Hill-1993.
2. P. K. Ghosh and P. R. Sridhar- “0000 to 8085: Introduction to Microprocessors for Engineers and Scientists”- 2nd Edition- PHI- 1995.
3. NagoorKani- “Microprocessor (8085) and its Applications”- 2nd Edition- RBA Publications- 2006.
4. V. Vijayendran- “Fundamentals of Microprocessors – 8085”- S. Viswanathan Pvt. Ltd.- 2008.

WEB REFERENCES:

NPTEL & MOOC courses titled Computer organization

<https://nptel.ac.in/courses/106105163/>

<https://nptel.ac.in/courses/106103068>