



*R 20 Regulations*

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY ANANTAPUR**  
**(Established by Govt. of A.P., ACT No.30 of 2008)**  
**ANANTHAPURAMU – 515 002 (A.P) INDIA**

**Computer Science & Engineering**

Course Code	DIGITAL ELECTRONICS & MICROPROCESSORS	L	T	P	C
20A04304T		3	0	0	3
Pre-requisite	Basic Electronics	Semester	III		
<b>Course Objectives:</b>					
<ul style="list-style-type: none"><li>• To understand all the concepts of Logic Gates and Boolean Functions.</li><li>• To learn about Combinational Logic and Sequential Logic Circuits.</li><li>• To design logic circuits using Programmable Logic Devices.</li><li>• To understand basics of 8086 Microprocessor and 8051 Microcontroller.</li><li>• To understand architecture of 8086 Microprocessor and 8051 Microcontroller.</li><li>• To learn Assembly Language Programming of 8086 and 8051.</li></ul>					
<b>Course Outcomes (CO):</b>					
After Completion of this course, the student will be able to:					
<ul style="list-style-type: none"><li>• Design any Logic circuit using basic concepts of Boolean Algebra.</li><li>• Design any Logic circuit using basic concepts of PLDs.</li><li>• Design and develop any application using 8086 Microprocessor.</li><li>• Design and develop any application using 8051 Microcontroller.</li></ul>					
UNIT - I                                      Number Systems & Code Conversion					
Number Systems & Code conversion, Boolean Algebra & Logic Gates, Truth Tables, Universal Gates, Simplification of Boolean functions, SOP and POS methods – Simplification of Boolean functions using K-maps, Signed and Unsigned Binary Numbers.					
UNIT - II                                      Combinational Circuits					
Combinational Logic Circuits: Adders & Subtractors, Multiplexers, Demultiplexers, Encoders, Decoders, Programmable Logic Devices.					
UNIT - III                                      Sequential Circuits					
Sequential Logic Circuits: RS, Clocked RS, D, JK, Master Slave JK, T Flip-Flops, Shift Registers, Types of Shift Registers, Counters, Ripple Counter, Synchronous Counters, Asynchronous Counters, Up-Down Counter.					
UNIT - IV                                      Microprocessors - I					
8085 microprocessor Review (brief details only), 8086 microprocessor, Functional Diagram, register organization 8086, Flag register of 8086 and its functions, Addressing modes of 8086, Pin diagram of 8086, Minimum mode & Maximum mode operation of 8086, Interrupts in 8086.					
UNIT – V                                      Microprocessors - II					
Instruction set of 8086, Assembler directives, Procedures and Macros, Simple programs involving arithmetic, logical, branch instructions, Ascending, Descending and Block move programs, String Manipulation Instructions. Overview of 8051 microcontroller, Architecture, I/O ports and Memory organization, addressing modes and instruction set of 8051(Brief details only), Simple Programs.					
<b>Text Books:</b>					
1.M. Morris Mano, Michael D. Ciletti, Digital Design, Pearson Education, 5 <sup>th</sup> Edition, 2013					
2. Anil K. Maini, Digital Electronics: Principles, Devices and Applications, John Wiley & Sons, Ltd., 2007.					
3. N. Senthil Kumar, M. Saravanan, S. Jeevanathan, Microprocessor and Microcontrollers, Oxford Publishers, 2010.					
4. Advanced microprocessors and peripherals-A.K Ray and K.M.Bhurchandani, TMH, 2nd edition, 2006.					



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<b>Reference Books:</b>
1. Thomas L. Floyd, Digital Fundamentals – A Systems Approach, Pearson, 2013. 2. Charles H. Roth, Fundamentals of Logic Design, Cengage Learning, 5th, Edition, 2004. 3. D.V.Hall, Microprocessors and Interfacing. TMGH, 2nd edition, 2006. 4. Kenneth.J.Ayala, The 8051 microcontroller, 3rd edition, Cengage Learning,2010.
<b>Online Learning Resources:</b>
NPTEL, SWAYAM