

**PANIPAT INSTITUTE OF ENGINEERING & TECHNOLOGY**  
**Department of Electronics & Communication Engineering**

**LESSON PLAN**

**Subject Name: - Microprocessors & Microcontrollers**  
**Year: - 2nd**

**Subject Code: - EC-210A**  
**Semester:-4<sup>th</sup>**

**LESSON PLAN**

<b>Lecture No.</b>	<b>UNIT NO.</b>	<b>Topics</b>	<b>REFERENCES</b>
<b>L1</b>	<b>UNIT-1</b>	Introduction to subject, Introduction to Microprocessors, Evolution of Microprocessor	Mke Predko, "Programming and Customizing the 8051 Microcontroller", TMH
<b>L2</b>		8085 CPU Architecture: Introduction to 8085 – 8085 Architecture.	Manish K Patel,"Microcontroller based embedded system", McGraw Hill Education.
<b>L3</b>		Pin Details	Manish K Patel,"Microcontroller based embedded system", McGraw Hill Education.
<b>L4</b>		Addressing Modes,	Manish K Patel,"Microcontroller based embedded system", McGraw Hill Education.

<b>L5</b>		Instruction Set	Manish K Patel, "Microcontroller based embedded system", McGraw Hill Education.
<b>L6</b>		Instruction Set	<a href="https://www.youtube.com/watch?v=gAJDC8IN00I">https://www.youtube.com/watch?v=gAJDC8IN00I</a>
<b>L7</b>		Assembler Directives	Mke Predko, "Programming and Customizing the 8051 Microcontroller", TMH
<b>L8</b>		Instruction Timing Diagram	Mke Predko, "Programming and Customizing the 8051 Microcontroller", TMH
<b>L9</b>		8086 CPU Architecture: 8086 Block diagram;	Mke Predko, "Programming and Customizing the 8051 Microcontroller", TMH
<b>L10</b>		Description of data registers, address registers; pointer and index registers, Queue, BIU and EU.	<a href="https://www.youtube.com/watch?v=gAJDC8IN00I">https://www.youtube.com/watch?v=gAJDC8IN00I</a>
<b>L11</b>		PSW	<a href="https://www.youtube.com/watch?v=gAJDC8IN00I">https://www.youtube.com/watch?v=gAJDC8IN00I</a>
<b>L12</b>		8086 Pin diagram description	<a href="https://www.youtube.com/watch?v=XI2nWDcy0">https://www.youtube.com/watch?v=XI2nWDcy0</a>

			To&list=PLgNUCz66Ka WR_cqLI3vnp9MHovRv YrOM6
<b>L13</b>		Generating 8086 CLK and reset signals using 8284. WAIT state generation	<a href="https://www.youtube.com/watch?v=XI2nWDcy0">https://www.youtube.com/watch?v=XI2nWDcy0</a> To&list=PLgNUCz66Ka WR_cqLI3vnp9MHovRv YrOM6
<b>L14</b>		Microprocessor BUS types and buffering techniques	<a href="https://www.youtube.com/watch?v=XI2nWDcy0">https://www.youtube.com/watch?v=XI2nWDcy0</a> To&list=PLgNUCz66Ka WR_cqLI3vnp9MHovRv YrOM6
<b>L15</b>		8086 Minimum mode module	<a href="https://www.youtube.com/watch?v=XI2nWDcy0">https://www.youtube.com/watch?v=XI2nWDcy0</a> To&list=PLgNUCz66Ka WR_cqLI3vnp9MHovRv YrOM6
<b>L16</b>		Maximum mode CPU module	<a href="https://www.youtube.com/watch?v=XI2nWDcy0">https://www.youtube.com/watch?v=XI2nWDcy0</a> To&list=PLgNUCz66Ka WR_cqLI3vnp9MHovRv YrOM6
<b>L17</b>		8086 CPU Read/Write timing diagrams in minimum mode and maximum mode	Mke Predko, "Programming and Customizing the 8051 Microcontroller", TMH
<b>L18</b>	<b>Unit-2</b>	8051 Architecture, On-chip memory organization – general	

		purpose registers, ,	Mke Predko, “Programming and Customizing the 8051 Microcontroller”, TMH
<b>L19</b>		SFR registers, Internal RAM and ROM,	<a href="https://www.youtube.com/watch?v=XI2nWDcy0To&amp;list=PLgNUCz66KaWR_cqLI3vnp9MHovRvYrOM6">https://www.youtube.com/watch?v=XI2nWDcy0To&amp;list=PLgNUCz66KaWR_cqLI3vnp9MHovRvYrOM6</a>
<b>L20</b>		Pin Diagram of 8051,	<a href="https://www.youtube.com/watch?v=RdjtRpFIAnc&amp;list=PLiQ6yyBxf5MoSZKMOqFredyH24e6sdZL4">https://www.youtube.com/watch?v=RdjtRpFIAnc&amp;list=PLiQ6yyBxf5MoSZKMOqFredyH24e6sdZL4</a>
<b>L21</b>		I/O Pins, Port, Connecting external memory, Counters and Timers	Mke Predko, “Progr <a href="https://www.youtube.com/watch?v=RdjtRpFIAnc&amp;list=PLiQ6yyBxf5MoSZKMOqFredyH24e6sdZL4">https://www.youtube.com/watch?v=RdjtRpFIAnc&amp;list=PLiQ6yyBxf5MoSZKMOqFredyH24e6sdZL4</a> mming and Customizing the 8051 Microcontroller”, TMH
<b>L22</b>		Purpose of TCON & TMOD registers, ,	<a href="https://www.youtube.com/watch?v=RdjtRpFIAnc&amp;list=PLiQ6yyBxf5MoSZKMOqFredyH24e6sdZL4">https://www.youtube.com/watch?v=RdjtRpFIAnc&amp;list=PLiQ6yyBxf5MoSZKMOqFredyH24e6sdZL4</a>
<b>L23</b>		Serial data transmission/reception and transmission modes	<a href="https://www.youtube.com/watch?v=RdjtRpFIAnc&amp;list=PLiQ6yyBxf5MoSZKMOqFredyH24e6sd">https://www.youtube.com/watch?v=RdjtRpFIAnc&amp;list=PLiQ6yyBxf5MoSZKMOqFredyH24e6sd</a>

			ZL4
<b>L24</b>		Purpose of SCON & PCON registers, Different Types of Interrupts	<a href="https://www.youtube.com/watch?v=RdjtRpFIAn c&amp;list=PLiQ6yyBxf5Mo SZKMOqFredyH24e6sd">https://www.youtube.com/watch?v=RdjtRpFIAn c&amp;list=PLiQ6yyBxf5Mo SZKMOqFredyH24e6sd</a> ZL4
<b>L25</b>		Purpose of Time Delays, 8051 addressing modes.	<a href="https://www.youtube.com/watch?v=RdjtRpFIAn c&amp;list=PLiQ6yyBxf5Mo SZKMOqFredyH24e6sd">https://www.youtube.com/watch?v=RdjtRpFIAn c&amp;list=PLiQ6yyBxf5Mo SZKMOqFredyH24e6sd</a> ZL4
<b>L26</b>		Oscillator and Clock circuits.	<a href="https://www.youtube.com/watch?v=RdjtRpFIAn c&amp;list=PLiQ6yyBxf5Mo SZKMOqFredyH24e6sd">https://www.youtube.com/watch?v=RdjtRpFIAn c&amp;list=PLiQ6yyBxf5Mo SZKMOqFredyH24e6sd</a> ZL4
<b>L27</b>	<b>Unit-3</b>	8086 Instruction Set: Instruction formats,	<a href="https://www.youtube.com/watch?v=RdjtRpFIAn c&amp;list=PLiQ6yyBxf5Mo SZKMOqFredyH24e6sd">https://www.youtube.com/watch?v=RdjtRpFIAn c&amp;list=PLiQ6yyBxf5Mo SZKMOqFredyH24e6sd</a> ZL4
<b>L28</b>		Addressing modes	<a href="https://www.youtube.com/watch?v=RdjtRpFIAn c&amp;list=PLiQ6yyBxf5Mo SZKMOqFredyH24e6sd">https://www.youtube.com/watch?v=RdjtRpFIAn c&amp;list=PLiQ6yyBxf5Mo SZKMOqFredyH24e6sd</a> ZL4
<b>L29</b>		Data transfer instructions	<a href="https://www.youtube.com/watch?v=RdjtRpFIAn">https://www.youtube.com/watch?v=RdjtRpFIAn</a>

			c&list=PLiQ6yyBxf5MoSZKMOqFredyH24e6sdZL4
<b>L30</b>		string instructions, logical instructions	<a href="https://www.youtube.com/watch?v=RdjtRpFIAn">https://www.youtube.com/watch?v=RdjtRpFIAn</a> c&list=PLiQ6yyBxf5MoSZKMOqFredyH24e6sdZL4
<b>L31</b>		arithmetic instructions	<a href="https://www.youtube.com/watch?v=XI2nWDcy0To&amp;list=PLgNUCz66KaWR_cqLI3vnp9MHovRvYrOM6">https://www.youtube.com/watch?v=XI2nWDcy0To&amp;list=PLgNUCz66KaWR_cqLI3vnp9MHovRvYrOM6</a>
<b>L32</b>		transfer of control instructions; process control instructions	Mke Predko, "Programming and Customizing the 8051 Microcontroller", TMH
<b>L33</b>		Assembler directives	<a href="https://www.youtube.com/watch?v=XI2nWDcy0To&amp;list=PLgNUCz66KaWR_cqLI3vnp9MHovRvYrOM6">https://www.youtube.com/watch?v=XI2nWDcy0To&amp;list=PLgNUCz66KaWR_cqLI3vnp9MHovRvYrOM6</a>
<b>L34</b>	<b>Unit-4</b>	Memory devices, Address decoding techniques,	<a href="https://www.youtube.com/watch?v=XI2nWDcy0To&amp;list=PLgNUCz66KaWR_cqLI3vnp9MHovRvYrOM6">https://www.youtube.com/watch?v=XI2nWDcy0To&amp;list=PLgNUCz66KaWR_cqLI3vnp9MHovRvYrOM6</a>
<b>L35</b>		Interfacing SRAMS; ROMS/PROMS	<a href="https://www.youtube.com/watch?v=XI2nWDcy0To&amp;list=PLgNUCz66KaWR_cqLI3vnp9MHovRvYrOM6">https://www.youtube.com/watch?v=XI2nWDcy0To&amp;list=PLgNUCz66KaWR_cqLI3vnp9MHovRvYrOM6</a>

<b>L36</b>		Basic I/O Interface: Parallel and Serial I/O Port design and address decoding. Memory mapped I/O Vs Isolated I/O	<a href="https://www.youtube.com/watch?v=XI2nWDcy0To&amp;list=PLgNUCz66KaWR_cqLI3vnp9MHovRvYrOM6">https://www.youtube.com/watch?v=XI2nWDcy0To&amp;list=PLgNUCz66KaWR_cqLI3vnp9MHovRvYrOM6</a>
<b>L37</b>		Intel's 8255 description and interfacing with 8086	<a href="https://www.youtube.com/watch?v=XI2nWDcy0To&amp;list=PLgNUCz66KaWR_cqLI3vnp9MHovRvYrOM6">https://www.youtube.com/watch?v=XI2nWDcy0To&amp;list=PLgNUCz66KaWR_cqLI3vnp9MHovRvYrOM6</a>
<b>L38</b>		Intel's 8255 description and interfacing with 8086	<a href="https://www.youtube.com/watch?v=XI2nWDcy0To&amp;list=PLgNUCz66KaWR_cqLI3vnp9MHovRvYrOM6">https://www.youtube.com/watch?v=XI2nWDcy0To&amp;list=PLgNUCz66KaWR_cqLI3vnp9MHovRvYrOM6</a>
<b>L39</b>		ADCs - types, operation and interfacing with 8086	<a href="https://www.youtube.com/watch?v=XI2nWDcy0To&amp;list=PLgNUCz66KaWR_cqLI3vnp9MHovRvYrOM6">https://www.youtube.com/watch?v=XI2nWDcy0To&amp;list=PLgNUCz66KaWR_cqLI3vnp9MHovRvYrOM6</a>
<b>L40</b>		DACs - types, operation and interfacing with 8086	<a href="https://www.youtube.com/watch?v=XI2nWDcy0To&amp;list=PLgNUCz66KaWR_cqLI3vnp9MHovRvYrOM6">https://www.youtube.com/watch?v=XI2nWDcy0To&amp;list=PLgNUCz66KaWR_cqLI3vnp9MHovRvYrOM6</a>
<b>L41</b>		Interfacing of Keyboards, alphanumeric displays	<a href="https://www.youtube.com/watch?v=XI2nWDcy0To&amp;list=PLgNUCz66KaWR_cqLI3vnp9MHovRvYrOM6">https://www.youtube.com/watch?v=XI2nWDcy0To&amp;list=PLgNUCz66KaWR_cqLI3vnp9MHovRvYrOM6</a>
<b>L42</b>		Interfacing of multiplexed displays	<a href="https://www.youtube.com/watch?v=XI2nWDcy0To&amp;list=PLgNUCz66KaWR_cqLI3vnp9MHovRvYrOM6">https://www.youtube.com/watch?v=XI2nWDcy0To&amp;list=PLgNUCz66KaWR_cqLI3vnp9MHovRvYrOM6</a>

<b>L43</b>		Interfacing of stepper motor	<a href="https://www.youtube.com/watch?v=XI2nWDcy0To&amp;list=PLgNUCz66KaWR_cqLI3vnp9MHovRvYrOM6">https://www.youtube.com/watch?v=XI2nWDcy0To&amp;list=PLgNUCz66KaWR_cqLI3vnp9MHovRvYrOM6</a>
<b>L44</b>		Interfacing of optical encoder with 8086	<a href="https://www.youtube.com/watch?v=XI2nWDcy0To&amp;list=PLgNUCz66KaWR_cqLI3vnp9MHovRvYrOM6">https://www.youtube.com/watch?v=XI2nWDcy0To&amp;list=PLgNUCz66KaWR_cqLI3vnp9MHovRvYrOM6</a>
<b>L45</b>		Intel's 8251 description and interfacing with 8086	<a href="https://www.youtube.com/watch?v=XI2nWDcy0To&amp;list=PLgNUCz66KaWR_cqLI3vnp9MHovRvYrOM6">https://www.youtube.com/watch?v=XI2nWDcy0To&amp;list=PLgNUCz66KaWR_cqLI3vnp9MHovRvYrOM6</a>
<b>L46</b>		Temperature Sensor, Stepper Motor with 8051.	<a href="https://www.youtube.com/watch?v=XI2nWDcy0To&amp;list=PLgNUCz66KaWR_cqLI3vnp9MHovRvYrOM6">https://www.youtube.com/watch?v=XI2nWDcy0To&amp;list=PLgNUCz66KaWR_cqLI3vnp9MHovRvYrOM6</a>

### **Text Books:**

1. D.V. Hall, Microprocessors and Interfacing, McGraw Hill 2nd ed.
2. Kenneth Ayala, "The 8051 Microcontroller" 3rd ed. CENGAGE Learning.
3. M.A. Mazidi, J.G. Mazidi, R. D. McKinlay, "The 8051 Microcontroller and Embedded systems using assembly and C" -2nd Ed, Pearson Education.
4. Liu, Gibson, "Microcomputer Systems: The 8086/88 Family", 2nd Edition, PHI,2005.
5. Barry B. Brey, "The Intel Microprocessor 8086/8088, 80186", Pearson Education, Eighth Edition, 2009.
6. Uffenback, "The 8086 Family Design" PHI, 2nd Edition.

### **Reference Books:**

1. Mke Predko, "Programming and Customizing the 8051 Microcontroller", TMH.
2. Manish K Patel, "Microcontroller based embedded system", McGraw Hill Education.



