

**University of Technology**  
**Computer Engineering Department**  
**Academic Year 2023 - 2024**  
**Fourth Year – (1<sup>st</sup>) Semester – (IE/NE) Branch**



<b>Code</b>	<b>Parallel processing</b>	<b>2 Hours/Week</b>	<b>2 Units</b>
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Contents of Syllabus	Hours
<ul style="list-style-type: none"> <li>❖ <b>Introduction</b> <ul style="list-style-type: none"> <li>▪ Introduction to Parallel Computing and Distributed Programming</li> </ul> </li> </ul>	2
<ul style="list-style-type: none"> <li>❖ <b>Parallel Architecture</b> <ul style="list-style-type: none"> <li>▪ Parallel Programming Models</li> <li>▪ Parallel Programming Methodology</li> <li>▪ Parallel Programming Model and algorithm design</li> </ul> </li> </ul>	8
<ul style="list-style-type: none"> <li>❖ <b>Shared memory programming</b> <ul style="list-style-type: none"> <li>▪ SIMD programming and OpenMP</li> <li>▪ OpenMP programming</li> </ul> </li> </ul>	6
<ul style="list-style-type: none"> <li>❖ <b>Performance analysis</b> <ul style="list-style-type: none"> <li>▪ Performance analysis of parallel programs</li> </ul> </li> </ul>	4
<ul style="list-style-type: none"> <li>❖ <b>Programming Using the Message Passing Paradigm</b> <ul style="list-style-type: none"> <li>▪ MPI parallel programming</li> <li>▪ MPI examples</li> </ul> </li> </ul>	6
<ul style="list-style-type: none"> <li>❖ <b>Programming Model</b> <ul style="list-style-type: none"> <li>▪ Introduction to GPGPUs and (CUDA, or OpenCL )</li> <li>▪ CUDA or OpenCL</li> </ul> </li> </ul>	4

**Textbooks:-** NON

**References:-**

1. Peter Pacheco, An Introduction to Parallel Programming, Morgan Kaufmann, 2011
2. Michael Quinn, Parallel Programming in C with MPI and OpenMP, McGraw-Hill