

1.	Title of the course	Parallel Computing
2.	Course number	CS520L
3.	Structure of credits	3-0-0-3
4.	Offered to	PG
5.	New course/modification to	Modification To CS5105/12
6.	To be offered by	Department of Computer Science and Engineering
7.	To take effect from	July 2022
8.	Prerequisite	Nil
9.	Course Objective(s): To design and develop parallel algorithms for both shared and distributed memory models. To analyze and optimize the performance of parallel programs.	
10.	Course Content: Introduction: principles of parallel algorithm design, parallel computer architectures, basic communication operation; Parallel programming: message passing paradigm, shared address space platforms, accelerators; Analytical modeling of parallel programs; Synchronization; Scalability; Parallel input-output; Parallel algorithms and applications: matrix computations, sort and search algorithms, graph algorithms, Fast Fourier Transform (FFT), graphics.	
11.	Textbook(s): 1. Ananth G, Anshul G, George K and Vipin K, <i>Introduction to Parallel Computing</i> , 2nd Edition, Addison Wesley (2003).	
12.	Reference(s): 1. Barbara C, Gabriele J and Ruud van der P, <i>Using OpenMP: Portable Shared Memory Parallel Programming</i> , 1st Edition, The MIT Press (2008) 2. David B K and Wen-mei W H, <i>Programming Massively Parallel Processors: A Hands-on Approach</i> , 3rd Edition, Morgan Kaufmann (2016). 3. Michael J Q, <i>Parallel Computing: Theory and Practice</i> , 2nd Edition, Tata McGraw Hill India (2011). 4. William G, Torsten H, Ewing L and Rajeev T, <i>Using Advanced MPI: Modern Features of the Message-Passing Interface</i> , 1st Edition, The MIT Press (2015)	