1.	Title of the course	Parallel Computing
2.	Course number	CS5105
3.	Status of the course	Core
4.	Structure of credits	3-0-0-3
5.	Offered to	PG
6.	New course/modification to	New course
7.	To be offered by	Department of Computer Science and Engineering
8.	To take effect from	July 2020
9.	Prerequisite	Nil
10.	Whether approved by the Department	Yes
11.	**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.	
12.	**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.	
13.	**Textbook(s):** 1. Ananth G, Anshul G, George K and Vipin K, *Introduction to Parallel Computing*, 2nd Edition, Addison Wesley (2003).	
14.	**Reference(s):** 1. Barbara C, Gabriele J and Ruud van der P, *Using OpenMP: Portable Shared Memory Parallel Programming*, 1st Edition, The MIT Press (2008) 2. David B K and Wen-mei W H, *Programming Massively Parallel Processors: A Hands-on Approach*, 3rd Edition, Morgan Kaufmann (2016). 3. Michael J Q, *Parallel Computing: Theory and Practice*, 2nd Edition, Tata McGraw Hill India (2011). 4. William G, Torsten H, Ewing L and Rajeev T, *Using Advanced MPI: Modern Features of the Message-Passing Interface*, 1st Edition, The MIT Press (2015)	