Lesson Plan &Work-done Diary for AY: 2025-26, ODD Semester

Course with Code: Parallel Programming – BDS701				**Faculty Name:** Dr. Vinod Kumar P			**Semester & Section:** VII	
Class No.	Date Planned (DD/MM/YYYY)	Topics to be covered	TLP Planned	Class No.	Date of Conduction (DD/MM/YYYY)	Topics Covered	TLP Executed	Remarks if any deviation
MODULE-1								
1		Introduction to parallel programming, Parallel hardware and parallel software	Chalk and Talk, PPT	1				
2		Classifications of parallel computers	Chalk and Talk, PPT	2				
3		SIMD systems, MIMD systems,	Chalk and Talk, PPT	3				
4		Interconnection networks	Chalk and Talk, PPT	4				
5		Cache coherence	Chalk and Talk, PPT	5				
6		Shared-memory vs. distributed-memory	Chalk and Talk, PPT	6				
7		Shared-memory vs. distributed-memory	Chalk and Talk, PPT	7				
8		Coordinating the processes/threads, Shared-memory	Chalk and Talk, PPT	8				
9		Distributed-memory.	Chalk and Talk, PPT	9				

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MODULE-2									
10		GPU programming	Chalk and Talk, PPT	10					
11		Programming hybrid systems	Chalk and Talk, PPT	11					
12		MIMD systems, GPUs, Performance	Chalk and Talk, PPT	12					
13		Speedup and efficiency in MIMD systems	Chalk and Talk, PPT	13					
14		Amdahl's law	Chalk and Talk, PPT	14					
15		Scalability in MIMD systems	Chalk and Talk, PPT	15					
16		Taking timings of MIMD programs	Chalk and Talk, PPT	16					
17		GPU performance.	Chalk and Talk, PPT	17					

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MODULE-3								
18		Distributed memory programming with MPI	Chalk and Talk, PPT	18				
19		MPI functions	Chalk and Talk, PPT	19				
20		The trapezoidal rule in MPI,	Chalk and Talk, PPT	20				
21		Dealing with I/O,	Chalk and Talk, PPT	21				
22		Collective communication	Chalk and Talk, PPT	22				
23		MPI-derived datatypes,	Chalk and Talk, PPT	23				
24		Performance evaluation of MPI programs	Chalk and Talk, PPT	24				
25		A parallel sorting algorithm.	Chalk and Talk, PPT	25				

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MODULE-4								
26		Shared-memory programming with OpenMP	Chalk and Talk, PPT	26				
27		openmp pragmas and directives,	Chalk and Talk, PPT	27				
28		The trapezoidal rule,	Chalk and Talk, PPT	28				
29		Scope of variables, The reduction clause,	Chalk and Talk, PPT	29				
30		loop carried dependency, scheduling,	Chalk and Talk, PPT	30				
31		producers and consumers, Caches,	Chalk and Talk, PPT	31				
32		cache coherence and false sharing in openmp	Chalk and Talk, PPT	32				
33		tasking, thread safety.	Chalk and Talk, PPT	33				

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MODULE-5								
34		GPU programming with CUDA - GPUs and GPGPU	Chalk and Talk, PPT	34				
35		GPU architectures, Heterogeneous computing,	Chalk and Talk, PPT	35				
36		Threads, blocks, and grids Nvidia compute capabilities and device architectures,	Chalk and Talk, PPT	36				
37		Vector addition, Returning results from CUDA kernels,	Chalk and Talk, PPT	37				
38		CUDA trapezoidal rule I,	Chalk and Talk, PPT	38				
39		CUDA trapezoidal rule II: improving performance,	Chalk and Talk, PPT	39				
40		CUDA trapezoidal rule III: blocks with more than one warp.	Chalk and Talk, PPT	40				

	Activity	Planned	Actual	Remarks
1	Theory Classes	40		
2	Assignments/ Quizzes/ Self-study	3		
3	Tutorials/ Extra classes	-		
4	Internal Assessments	3		
5	ICT based Teaching (% of usage in Curriculum)	100%		

Planning	Execution
Faculty Signature:	**Faculty Signature:**
HoD Signature:	**HoD Signature:**