National University

of Computer & Emerging Sciences

Department	Department of Computer Science	**Dept. Code**	CS
Course Title	Parallel and Distributed Computing	**Course Code**	CS326
Pre-requisite(s)	Operating System	**Credit Hrs.**	3+0

Course Objective:	

PLO	Program Learning Outcome (PLO) Statement
02	**Problem Analysis:** Identify, formulate, research literature, and analyse complex computing problems, reaching substantiated conclusions using first principles of mathematics, natural sciences, and computing sciences.
03	**Design/Develop Solutions:** Design solutions for complex computing problems and design systems, components, and processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.

CLO	Course Learning Outcome (CLO)	Domain	Taxonomy Level	PLO	Tools
01	Learn about parallel and distributed computers	Cognitive	3	2	P, M1,F
02	Write portable programs for parallel or distributed architectures using Message-Passing Interface (MPI) library.	Cognitive	4	3	P, CA, M2, F
03	Analyze complex problems with shared memory programming with openMP.	Cognitive	5	3	P, CA, M2, F
Tool: A = Assignment, Class Activities = CA, P=Project, M = Midterm, F=Final,					

Text Book(s)	**Title**	**Introduction to Parallel Computing, Second Edition**
	Author	Ananth Grama, Anshul Gupta, George Karypis, Vipin Kumar
Ref. Book(s)	**Title**	**Distributed and Cloud Computing (From Parallel Processing to the Internet of Things)**
	Author	Kai Hwang,Geoffrey C. Fox,Jack J. Dongarra.

Week	Course Contents/Topics	Chapter	CLO
01	Revision of operating system basic concepts	-	3
02	Introduction to parallel computing	-	1
03	Parallel Programming Platforms	2	1
04	Principles of Parallel Algorithm Design	3.1-3.3	1,2,3
05	Principles of Parallel Algorithm Design	3.3.1, 3.3.2,3.4	1,2,3
06	Mid-I Term Exam		
07	Programming Shared Address Space	7.10	1,3
08	Programming Shared Address Space	7.10	1,3
09	Programming Using the Message Passing Paradigm	6.1-6.7	1,2
10	Programming Using the Message Passing Paradigm	6.1-6.7	1,2
11	Mid-II Term Exam		
12	Distributed System Models and Enabling Technologies (Dongarra.)	1 (1.1-1.4)	1,2,3
13	Distributed System Models and Enabling Technologies	1 (1.1-1.4)	1,2,3
14	Computer Clusters for Scalable Parallel Computing (Dongarra.)	2 (2.1-2.2)	1,2,3
15	Computer Clusters for Scalable Parallel Computing	2 (2.1-2.2)	1,2,3

Assessment Plan:

Assessment	Weightage
Class Activities	5%
Assignment	5%
Project	10%
Midterm Exams	30%
Final	50%