Jordan University of Science and Technology

Faculty of Computer & Information Technology

Computer Science Department

CS475 Emerging Computer Systems
Summer Semester 2019-2020

Course Catalog
3 Credit Hours. Definition and characteristics of parallel computing, parallel algorithm, grid computing, autonomic computing, distributed computer systems, architectural and software models, remote procedure calls, distributed objects, processes and threads, logical clocks and ordering of events, distributed algorithms (e.g., mutual exclusion, consensus and election, termination detection), pervasive computing, distributed multimedia systems, distributed file systems, replication. Topics include distributed file systems, concurrency, and distributed process coordination. Introduction to network communication issues and special purpose systems such as real time systems, transaction processing systems, and client-server technology. Network Operating Systems; Distributed Operating Systems.

Text Book	
Title	Introduction to Parallel Computing,
Author(s)	Ananth Grama, Anshul Gupta, George Karypis, Vipin Kumar
Edition	2nd Edition
Short Name	Textbook
Other Information	

Course References

Short name	Book name	Author(s)	Edition	Other Information
The C Programming Language	The C Programming Language	Brian Kernighan and Dennis Ritchie	1st Edition	

Instructor	
Name	**Dr. Ziad Al-Sharif**
Office Location	M2 L2, Engineering Building
Office Hours	
Email	zasharif@just.edu.jo

Class Schedule & Room
Section 1: Lecture Time: Sun, Mon, Tue, Wed : 13:00 - 14:30 Room: منصة الكترونية

Tentative List of Topics Covered		
Weeks	**Topic**	**References**
Weeks 1, 2	Introduction to Emerging Computing Systems	**introduction** From **Textbook**
Weeks 2, 3, 4	Review of C programming	**all** From **The C Programming Language**
Weeks 4, 5, 6, 7, 8	Introduction to parallel computing	**chapter 2 and 3** From **Textbook**, **introduction to parallel programming** From **Textbook**
Weeks 8, 9, 10	Parallel programming using Pthreads	**Chapter 7** From **Textbook**, **pthreads** From **Textbook**
Weeks 11, 12	Introduction to parallel programming design process	**Design** From **Textbook**
Weeks 12, 13, 14	Parallel programming using MPI	**chapter 6** From **Textbook**, **MPI** From **Textbook**

Mapping of Course Outcomes to Program Student Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Be able to identify main emerging computing systems and the main benefits of using them [1SO1]	2%	
Be able to identify the main C language features that support parallel programming [1SO5]	5%	
Be able to describe the main parallel computing concepts. [1SO5]	6%	
Be able to describe the different classes of the parallel computing systems. [1SO5]	3%	
Be able to identify the limits and the costs of parallel programming. [1SO5]	6%	
Be able to describe the main parallel computing memory architectures [1SO5]	4%	
Be able to implement a simple parallel algorithm using Pthreads [1SO1, 1SO5]	27%	
Be able to describe and apply the main steps in the parallel computing solution design process. [1SO1, 1SO5]	22%	
Be able to implement a simple parallel algorithm using MPI [1SO1, 1SO5]	25%	

Relationship to Program Student Outcomes (Out of 100%)					
SO1	SO2	SO3	SO4	SO5	SO6
39				61	

Evaluation	
Assessment Tool	**Weight**
Second Exam	20%
Quizes	10%
Assignments	15%
First Exam	15%
Final	40%

Policy	
Attendance	Attendance is very important for the course. In accordance with university policy, students missing more than 20% of total classes are subject to failure. Penalties may be assessed without regard to the student's performance. Attendance will be recorded at the beginning or end of each class
Exams	All exams will be CLOSE-BOOK; necessary algorithms/equations/relations will be supplied if required.

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