



Jordan University of Science and Technology
Faculty of Computer & Information Technology
Computer Engineering Department

CPE745 Parallel Computing

Second Semester 2023-2024

Course Catalog

3 Credit Hours. This course provides advanced topics in parallel computing. Topics include: Moore's law, Flynn's taxonomy, instruction-level parallelism, architectural support for shared memory, cache coherence, distributed memory, multi-processor, multi-core programming, thread programming, thread safety, synchronization, message passing, MPI-based parallel systems, and overview of modern parallel systems such as GPU, CUDA.

Teaching Method: Blended

Instructor

Name	Dr. Fady Ghanim
Office Location	-
Office Hours	
Email	faghanim@just.edu.jo

Class Schedule & Room

Section 1:
Lecture Time: Thu : 13:30 - 15:30
Room: A3129

Tentative List of Topics Covered

Weeks	Topic	References
	Basic Concepts in Parallel Computing	
	Parallel Architectures and Models	
	Cache Coherency and Memory Consistency	
	Introduction to Heterogeneous Parallel Computing	
	Shared Memory Architecture and Programming	
	Distributed Memory Architecture and Programming	

Mapping of Course Outcomes to Program Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Ability to understand the parallel basic concepts such as Parallelism vs concurrency, scalability, speed up, Amdahl's law, Moore's law, Flynn's taxonomy, and thread safety	10%	
Ability to distinguish between distributed and shared memory multiprocessors and their relationship to heterogeneous computing	10%	
Ability to use a shared-memory programming model to implement parallel codes	30%	
Ability to use heterogeneous Programming model to implement parallel codes	20%	
Ability to work in teams to research and learn about latest technologies in parallel computing	20%	
Ability to implement parallel programs using message passing primitives	10%	

Relationship to Program Student Outcomes (Out of 100%)																	
A	B	C	D	E	F	G	H	I	J	K	SO1	SO2	SO3	SO4	SO5	SO6	SO7

Evaluation	
Assessment Tool	Weight
Final	40%
Programming Project	30%
Research Project	30%

Date Printed: 2024-05-07