Cihan University
College of *Science*
Department of *Computer*

Course Book
CSC1203 parallel processing

Year: *4th / Computer Department*
Semester: *2nd*
Academic Year: 2014 / 2015
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Class Time: 1-hour, *Wednesday (12:30 PM -1:30 PM)*
: 1-hour, Thursday (10:30 PM- 11:30 PM) .

Assessment Method

Mid Semester Exam	30%
Quizzes & Assignments	5%
Attendance, H.W. and Activity	5%
Final Semester Exam	60%

List of Recommended Text Books

1- F. B. Moreshwer, **Parallel Computing**, Addison-Wesley Publishing Company, 2008.
2- M. Morris Mano, **Computer System Architecture** ,3rd edition.
3-Hesham El-Rewini, Mostafa Abd-El-Barr, **Advanced Computer Architecture And Parallel Processing**, Weily, 2005.
4- David A. Patterson, Hohn L. Hinnessy, **Computer Organization and design: the hardware / Software interface**. 3rd edition, Elsevier, 2005.

Syllabus

1. Introduction:

1.1- Basic Computer.

1.2- Parallel Computing.

1.3- Applications & Importance.

1.4- Some General Parallel Terminology.

2. Architecture Classifications:

2.1- Flynn's Classification.

2.2- Shore's Classification.

2.3- Feng's Classification.

2.4- Handler's Classification.

3. Parallel Computing Architecture:

3.1- Introduction.

3.2- Parallelism types.

3.3- Multiprocessors.

3.2.1-Synchronous Multiprocessors(Array processors).

3.2.2- Asynchronous (Conventional) Multiprocessors.

3.4- Memory architectures:

3.4.1- Shared Memory (Tightly Coupled).

A- Uniform Memory Access (UMA).

B- Non-uniform Memory Access (NUMA).

3.4.2- Distributed Memory (Loosely Coupled).

A-Grid.

B-Cluster.

3.4.3- Hybride Shared and Distributed Memory.

4. Performance of Parallel Processing:

4.1- Speedup & Efficiency.

4.2- Amdahl's Law.

4.3- Minsky's Conjecture.

4.4- Gustafson's Law.

5. Pipeline Processing:

5.1- Pipeline Definition.

5.2- Pipeline Performance in terms of Parallel Processing.

5.3- Arithmetic Pipeline.

- Floating Point Adder-Subtractor Architecture.

- Floating Point Adder-Subtractor Performance.

5.4- Instruction Pipeline.

- RISC Instruction Architecture.

- RICS Instruction Performance.

6. Interconnection Network and Classification.

6.1- Direct Connection Networks

6.2- Indirect Connection Networks .

6.2.1- Busses .

6.2.2- Multistage networks.

6.2.3- Crossbar switches.

7. Load Balancing.

- Three or four Quizzes.
- 2 or 3 Assignements.