



**The University of Jordan**

**Accreditation & Quality Assurance Center**

**COURSE Syllabus**

<b>1</b>	Course title	Special Topics
<b>2</b>	Course number	(1904485)
<b>3</b>	Credit hours (theory, practical)	3 Credit Hours, taught in a computer lab
	Contact hours (theory, practical)	3
<b>4</b>	Prerequisites/corequisites	<b>BIT Department Approval</b>
<b>5</b>	Program title	B.Sc. in BIT
<b>6</b>	Program code	04
<b>7</b>	Awarding institution	The University of Jordan
<b>8</b>	Faculty	King Abdullah II School for Information Technology
<b>9</b>	Department	BIT
<b>10</b>	Level of course	4
<b>11</b>	Year of study and semester (s)	Spring Semester – 2015/2016
<b>12</b>	Final Qualification	BSc
<b>13</b>	Other department (s) involved in teaching the course	-
<b>14</b>	Language of Instruction	English
<b>15</b>	Date of production/revision	
<b>16</b>	Required/ Elective	Elective

**16. Course Coordinator:**

Dr. Osama Rababah,  
Office hours: 12-1 Sundays and Tuesdays and by appointment,  
Tel: 065355000, ext. 22624,  
Office number: 310  
Email: o.rababah@ju.edu.jo

**17. Other instructors:**

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**18. Course Description:**

Selected Topics in advanced areas of Business Information Technologies, Report and Documentation will be discussed in this course.

**19. Course aims and outcomes:**

<b>A- Aims:</b>
The main goal of this course is to equip students with knowledge on parallel sorting algorithms and design via studying the fundamental concepts of sorting networks design and performance.
<b>B- Intended Learning Outcomes (ILOs):</b> Upon successful completion of this course students will be able to ...
<b>A. Knowledge and Understanding:</b> students should
A1. Understand the concept of a sorting network
A2. Understand the basic components of a sorting networks
A3. Understand basic techniques for designing sorting networks
A4. Understand the concept of preserving order
A5. Understand the 0/1 principle
A6. Understand basic concepts associated with the Sortnet program
<b>B. Intellectual Skills:</b> students should be able to:
B1. Compare between different sorting networks in terms of their speed.
B2. Compare between different sorting networks in terms of their size.
B3. Compare between different sorting algorithms in terms of their cost.
B4. Compare between different sorting algorithms in terms of their practicality.
<b>C. Subject Specific Skills:</b> students should be able to:
C1. Be able to implement basic sorting networks using software
C2. Be able to design and analyze the behavior of given sorting networks using the Sortnet program
<b>D. Transferable Skills:</b> students should be able to:
D1. Work in groups to design sorting networks
D2. Work in groups to analyze sorting networks

## 20. Topic Outline and Schedule:

Topic	Week	Instructor	Achieved ILOs	Evaluation Methods	Reference
Introduction <ul style="list-style-type: none"> <li>Parallel sorting</li> <li>Sorting Networks</li> </ul>	1+2		A1,A2	Quizzes and Exams	Textbook: Chapter 1
Bitonic Sorting: <ul style="list-style-type: none"> <li>Sorting network design</li> </ul>	3+4		A3, B1, D1-D2	Quizzes and Exams	Textbook: Chapter 1

<ul style="list-style-type: none"> <li>Sequential design</li> <li>Performance evaluation</li> </ul>					
Preserving Order: Posets	5		B1,B3, D1-D2	practical exercise	Textbook: Chapter 3
The 0/1 principle	6		A5	practical exercise	Textbook chapter 4
Sorting Networks Relabelling	7		<b>A3, D1-D2</b>	practical exercise	Textbook: Chapter 2
<b>Midterm Exam</b>	8				
The Van Voorhis 16-key Network	9		A3, B1-B3	Midterm Exam	Textbook: Chapter 5
The AKS Networks	10		A3, B1-B4	practical exercise	Reference 2: chapter 10
Lattice Theory	11+12		A3, A4	practical exercise	Textbook: Chapter 7
The Sortnet program	13-15		A6, C1-C2, D1-D2	Practical Exam	Textbook: Chapter 9 Lecture Notes from the e-learning website
FINAL EXAM	16			Final Exam	

## 21. Teaching Methods and Assignments:

Development of ILOs is promoted through the following teaching and learning methods:

**Teaching (T) Strategies:** Class Contact is 3 hours per week. The Course will be delivered using different means like lectures, discussions and hands-on exercises

**Learning (L) Methods:** Students attend classes, ask questions and participate in discussions, do in-class tasks during the semester, and use the Sortnet program to experiment with designing and analysing sorting networks. Additionally, students will implement basic parallel sorting networks sequentially in either C++ or Java during select in-class assignments. All lectures are conducted in the lab. Students will access the e-learning platform for more instruction and supported learning materials.

## 22. Evaluation Methods and Course Requirements:

Opportunities to demonstrate achievement of the ILOs are provided through the following assessment methods and requirements:

**Assessment (A) Methods:** There will be several assessment methods to evaluate the performance of the students such as class participation; conducting the Midterm and the Final Exams. Grading a number of in-class assignments as well as quizzes.

### Assessment Weights:

Midterm Exam	30%
In-class assignments and quizzes	20%
Final Exam	50%

**23. Course Policies:**

A- Attendance policies: Class attendance is mandatory. University regulations will be applied. Regular attendance is essential for satisfactory completion of this course.

B- Absences from exams and handing in assignments on time: Any student who misses any exam will receive a failing grade. Permission for makeup will be granted only if the student notifies the instructor in due time and presents evidence of an officially excused absence according to UJ policies. No make-up quizzes will be provided under all circumstances.

C- Health and safety procedures: Students are not permitted to let in the lab any food or beverage items, also, students are not allowed to tamper with the lab's computer wiring at all.

D- Honesty policy regarding cheating, plagiarism, misbehavior: The honor code applies to all work turned in for this course including exams and assignments. It is important that you understand the solutions to all problems, and the best way to gain an understanding is to work them out and write them up by yourself. Hence the policy is that you must submit your own work. You may not share your work with other students, unless it is allowed as group. Violating the policy will be taken as a no submission state for the assignment. University regulations will be preserved at all times. Additionally, over-due submissions will not be graded under all circumstances.

E- Grading policy: Tentative course scale

0-45	F	46-49	D-	50-52	D	53-55	D+	
56-58	C-	59-61	C	62-68	C+			
69-72	B-	73-76	B	77-82	B+	83-86	A-	87-100 A

F- Available university services that support achievement in the course: Computer labs, KASIT and UJ main libraries.

**24. Required equipment:**

Required software: The Sortnet program, light-weight C++/Java IDE (Codeblocks recommended)

Required Hardware: smartphones of different sizes for testing

**25. References:**

A- Required book (s), assigned reading and audio-visuals:

Sherenaz W. Al-Haj Baddar, Kenneth E. Batchner , Designing Sorting Networks: A New Paradigm, 1st edition, Springer, 2011.

B- Recommended books, materials, and media:

1. Kenneth Rosen, Discrete Mathematics and Its Applications, 4<sup>th</sup> edition, William C Brown Pub, 1998
2. Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein, Introduction to Computer Algorithms, 3<sup>rd</sup> edition, 2009

**26. Additional information:**

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Name of Course Coordinator: Dr. Sherenaz Al-Haj Baddar

Signature: -----

Date: 12-3-2016

Head of curriculum committee/Department: ----- Signature: -----

Head of Department: ----- Signature: -----

Head of curriculum committee/Faculty: ----- Signature: -----

Dean: ----- -Signature: -----

Copy to:  
Head of Department  
Assistant Dean for Quality Assurance  
Course File