



## Course Specification

**Course Name:** [File Organization and Processing ]

**Course Code:** [CS215]

### I. Basic Course Information

Major or minor element of program: [General]

Department offering the course: Computer Science Department

Academic level: [200 Level]

Semester in which course is offered: [Second (spring) semester]

Course pre-requisite(s): [Data Structure CS214 ]

Credit Hours: 3

Contact Hours Through:

Lecture	Tutorial *	Practical *	Total
2.5	0.0	1.5	4.0

\* 1.5 hours for **either** Tutorial or Practical

Approval date of course specification: January 2015

### II. Overall Aims of Course

The aim of this course is to introduce students to file systems and file processing. The course provides conceptual and hands-on understanding of file design and usage by addressing issues involved in a disk access and how to address them using file structuring. The course also re-examines concepts students have already learned such as sorting and searching, but in the context of external storage. ]

### III. Program ILOs covered by course

Program Intended Learning Outcomes (By Code)			
Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
[K1,K2 ]	[I5,I7 ]	[P1,P8,P9 ]	[G7,G9 ]



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**IV. Intended Learning Outcomes of Course (ILOs)**

**a. Knowledge and Understanding**

On completing course, students should be able to:

- K.1 Recognize issues affecting access speed on secondary storage (Disk & Tape).
- K.2 Describe differences between various field and record representations.
- K.3 Describe file organization issues and possible means of addressing them.
- K.4 Describe possible methods by which files can be sorted, searched and indexed. ]

**b. Intellectual/Cognitive Skills**

On completing course, students should be able to:

- I.1 Infer the best way to represent data in a file given the data characteristics.
- I.2 Refine proposed solutions given the problem at hand.
- I.3 Create an appropriate design for a given storage problem. ]

**c. Practical/Professional Skills**

On completing course, students should be able to:

- P.1 Calculate storage requirements and access times.
- P.2 Use sequential as well as direct file access to store and retrieve disk data.
- P.3 Apply file organization methods to improve file access efficiency.
- P.4 Build primary and secondary indices for a given file.
- P.5 Apply indexes and hashing techniques to improve retrieval of data. ]

**c. General and Transferable Skills**

On completing course, students should be able to:

- G.1 Use the object oriented programming paradigm.
- G.2 Use the C++ programming language to solve general computational problems.
- G.3 Synthesize clearly and precisely stated solutions for problems. ]

**V. Course Matrix Contents**

	Main Topics / Chapters	Duration (Weeks)	Course ILOs Covered by Topic (By ILO Code)			
			K & U	I.S.	P.S.	G.S.
1-	Introduction to the design and specification of file structures ]	[ 1 ]	[K3 ]	[ ]	[ ]	[ ]
2-	Fundamental file processing operations ]	[ 1 ]	[K3 ]	[I1 ]	[P2 ]	[G1, G2 ]
3-	Secondary storage and system software ]	[ 1 ]	[K1 ]	[ ]	[P1 ]	[ ]
4-	Managing files of records ]	[ 4 ]	[K2,K3 ]	[I3 ]	[P3 ]	[G1,G2,G3 ]
5-	Indexing and sorting ]	[ 3 ]	[K4 ]	[I2 ]	[P1,P3,P4,P5 ]	[G3 ]
6-	Multilevel indexing and B-trees ]	[ 1 ]	[K4 ]	[I2,I3 ]	[P3,P5 ]	[G3 ]
7-	Hashing ]	[ 2 ]	[K4 ]	[I1,I2 ]	[P3,P5 ]	[G3 ]
	<b>Net Teaching Weeks</b>	<b>13</b>				



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VI. Course Weekly Detailed Topics / hours / ILOs

Week No.	Sub-Topics	Total Hours	Contact Hours	
			Theoretical Hours	Practical Hours *
1	[Introduction to the design and specification of file structures ]	[3 ]	[3 ]	
2	[Fundamental file processing operations ]	4.5	3	1.5
3	[Secondary storage and system software ]	4.5	3	1.5
4	[Managing files and records ]	4.5	3	1.5
5	[Managing files and records ]	4.5	3	1.5
6	[Managing files of records ]	4.5	3	1.5
7	<b>Midterm Exam</b>			
8	[Managing files of records ]	4.5	3	1.5
9	[Indexing and sorting ]	4.5	3	1.5
10	[Indexing and sorting ]	4.5	3	1.5
11	[Indexing and sorting ]	4.5	3	1.5
12	[Multilevel indexing and B-trees ]	4.5	3	1.5
13	[Hashing ]	4.5	3	1.5
14	[Hashing ]	4.5	3	1.5
15	<b>Final Exam</b>			
<b>Total Teaching Hours</b>		<b>57</b>	<b>39</b>	<b>18</b>

\* No Practical/Tutorial during the first week of the semester

VII. Teaching and Learning Methods

Teaching/Learning Method	Selected Method	Course ILOs Covered by Method (By ILO Code)			
		K & U	Intellectual Skills	Professional Skills	General Skills
Lectures & Seminars	Yes	[All ]	[I1,I2 ]	[P1 ]	[ ]
Tutorials	[ ]	[ ]	[ ]	[ ]	[ ]
Computer lab Sessions	[ ]	[ ]	[ ]	[ ]	[ ]
Practical lab Work	Yes	[ ]	[I3 ]	[P2,P3,P4 ]	[ ]
Reading Materials	[ ]	[ ]	[ ]	[ ]	[ ]
Web-site Searches	[ ]	[ ]	[ ]	[ ]	[ ]
Research & Reporting	[ ]	[ ]	[ ]	[ ]	[ ]
Problem Solving / Problem-based Learning	[ ]	[ ]	[ ]	[ ]	[ ]
Projects	[ ]	[ ]	[ ]	[ ]	[ ]
Independent Work	Yes	[ ]	[ ]	[P2,P3,P4,P5 ]	[All ]
Group Work	Yes	[ ]	[ ]	[P2,P3,P4,P5 ]	[All ]
Case Studies	[ ]	[ ]	[ ]	[ ]	[ ]
Presentations	[ ]	[ ]	[ ]	[ ]	[ ]
Simulation Analysis	[ ]	[ ]	[ ]	[ ]	[ ]
Others (Specify):	[ ]	[ ]	[ ]	[ ]	[ ]



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VIII. Assessment Methods, Schedule and Grade Distribution

Assessment Method	Selected Method	Course ILOs Covered by Method (By ILO Code)				Assessment Weight / Percentage	Week No.
		K & U	I.S.	P.S.	G.S.		
Midterm Exam	Yes	K2, K3	I1	P1, P2	G1, G2	15%	7
Final Exam	Yes	All	I1	All	G1, G2	60%	15
Quizzes							
Course Work							
Report Writing							
Case Study Analysis							
Oral Presentations							
Practical	Yes		All	All	All	15%	6,10
Group Project	Yes		All	All	All	10%	15
Individual Project							
Others (Specify):							

IX. List of References

<b>Essential Text Books</b>	<ul style="list-style-type: none"> <li>[M.J. Folk and B. Zoellick. File structures; An Object Oriented Approach with C++, Third Edition. Reading, MA: Addison-Wesley, 1998]</li> </ul>
<b>Course notes</b>	<ul style="list-style-type: none"> <li>[<a href="http://www.acadox.com/class/14944#resources">http://www.acadox.com/class/14944#resources</a>]</li> </ul>
<b>Recommended books</b>	<ul style="list-style-type: none"> <li>[None]</li> </ul>
<b>Periodicals, Web sites, etc....</b>	<ul style="list-style-type: none"> <li>[Code from the text book are made available at the course website]</li> </ul>

X. Facilities required for teaching and learning

<p>List the facilities required</p> <ul style="list-style-type: none"> <li>• Appropriate teaching room</li> <li>• Projector</li> <li>• Computer labs with C++ installed on the computers</li> <li>• The mentioned-before text book.</li> </ul>
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**Course coordinator:** [Dr. Emad Nabi]

**Head of Department:** Prof. Abeer El Korany

**Date:** [January 2015]