Ministry of Higher Education and Scientific Research

SH. A.

أكاديميـــة الشروق

المعهد العالى للحاسبات وتكنولوجيا المعلومات
مدينة الشروق ـ القاهرة
شعبة علوم الحاسب

Course specification

Course Code: CS211

Course Title: File organization & Processing

Academic Year: /

Course specification
(CS201- Data structures)

Course Outline	
Faculty:	*HICIT- (**Higher Institute for Computers & Information Technology**-El Shorouk Academy)*
Programme(s) on which the course is given:	Undergraduate program in Computer Science
Major or minor element of programme:	Compulsory
Department offering the program	Department of Computer Science
Department offering the course:	Department of Computer Science
Level	Second Level
Date of specification approval	/ /2023

Basic Information			
Code: CS 211	*Title:*	File organization & Processing	
Prerequisites:	CS 102 Computer Programming		
Weekly Hours:			
Lecture: 2	**Exercise: -**	**Practical : 2**	**Total:** 3 credit hours

Professional Information

Course Aims:

The objective of this course is to teach ways of efficiently organizing and manipulating data in secondary storage.

After completing this course, the student should be able to:

  a. Explain the different types of file organizations
  b. Design and implement file structures
  c. Access and manipulate data in files
  d. Analyze the performance of file organizations

Program Intended learning outcomes (ILOs)

a.	Knowledge and understanding:
On successful completion of this program, graduates should be able to:	
a2	Deep understanding the concepts of the different high-level programming languages.
a8	Understanding fundamental topics of computer systems especially hardware architectures.
a13	Demonstrate strong knowledge of fundamentals of programming and the construction of computer-based systems.
a14	Demonstrate strong knowledge of fundamentals of Data Warehousing, data structures and algorithms.

b. Intellectual skills:	
On successful completion of this program, graduates should be able to:	
b2	Perform comparisons between (algorithms, methods, techniques, etc.).
b13	.Analyze and evaluate a range of options in producing a solution to an identified problem

c. Professional and practical skills:	
On successful completion of this program, graduates should be able to:	
c1	Use appropriate programming languages and design methodologies.
c7	Apply the principles of effective information management, information organization, and information-retrieval skills to information of various kinds, including text, images, sound, and video.

d. General and transferable skills:	
On successful completion of this program, graduates should be able to:	
d1	Work effectively as an individual and as a member of a team.
d2	Work effectively as an individual and as a member of a team.

Program ILOs Covered by Course			
Knowledge and understanding	Intellectual Skills	Professional and practical skills	General and Transferable skills
A2, A8, A13, A14	B2, B13	C1, C7	D1, D2

Intended learning outcomes of course (ILOs)
a. Knowledge and Understanding: a1. Understand the fundamental concepts and principles of file organization, including file structures, access methods, and indexing techniques.   a2. Understand the benefits and limitations of different file organization and processing techniques, and be able to select the most appropriate approach for a given problem.   a3. Develop skills in file manipulation and file input/output (I/O) operations using suitable programming language.
b. Intellectual Skills: b1. Analyze and evaluate different file organization and processing techniques to select the most appropriate approach for a given problem.   b2. Design and implement efficient file structures and access methods.   b3. Critically evaluate the performance of file processing systems and propose improvements.
c. Professional and practical skill   c1. Be able to implement file organization techniques in a programming language.   c2. Be able to use file organization techniques to solve real-world problems.
d. General and transferable skills   d1. Communicate effectively about file structures and ialgorithms with peers and instructors through oral and written reports.   d2. Work collaboratively with peers to develop and implement data structures and algorithms for group projects.

Contents		
Topic	**Contact Hours**	
	lecture	**Lab**
Introduction To File Organization	2	-
Fundamental File Processing Operations	2	2
Secondary Storage Devices	4	2
Managing Files of Records	2	2
Buffer Management	2	2
Organizing Files for Performance	4	4
Indexing	2	2
Cosequential Processing	2	2
B Trees	4	4
B+ Trees	2	2
Hashing	2	2
Course Project	-	4

Teaching and learning methods	
Teaching and learning methods	**Used**
Lectures	√
Tutorial Exercises	
Practical Lab	√
Discussions.	√
Self – Learning (Reading material, Websites search,)	√
Self-studies	-
Group work	√
Presentation	√
Problem solving/problem solving learning based	√
Case study	√
Synchronous E-Learning	-
Video lectures	√
Asynchronous E-Learning	√

Student assessment methods & Schedule

Methods	Used	Week#
Midterm Exam	√	**8**
Final Exam	√	**16**
Course Project	√	**3-14**
Course Work & Quizzes	√	**2-14**
Practical Exam	√	**15**

Assessment Weight

Assessment	Weight %
Mid Term Exam	10%
Practical Exam and Project	10%
Final Exam	60%
Course Work & Quizzes	20%
Total	100

Course Work &Quizzes

Short Exams, Assignments, Research, Reports, Presentations
Class/Project discussion

List of references

Essential books (textbooks)	File Structures an Object-Oriented Approach with C++, 2nd edition, Michael J. Folk, 1998
Course notes	E-Learning Portal
Recommended books	File Organization and Processing, Alan L. Tharp, 1988
Periodicals, website	
Videos link	E-Learning Portal

Required Facilities

Tools & SW (Technology facilities):	– NET framework	
Teaching facilities:	Whiteboard	√
	Computer Lab	√
	Data show	√
	E-Learning	√
	Videos	√
	Website	√

Course Content/ILO Matrix										
Course Contents	**Knowledge & understanding**			**Intellectual skills**			**Professinal and practical skills**		**General and transferable skills**	
	a1	a2	a3	b1	b2	b3	c1	c2	d1	d2
Introduction To File Organization	√	√							√	
Fundamental File Processing Operations	√	√	√		√		√	√	√	√
Secondary Storage Devices	√	√							√	
Managing Files of Records	√	√	√	√	√			√	√	
Buffer Management	√	√						√	√	
Organizing Files for Performance	√	√	√	√	√			√	√	√
Indexing	√	√	√			√	√	√	√	√
Cosequential Processing	√	√	√	√	√		√	√	√	√
B Trees	√	√	√	√	√	√	√	√	√	√
B+ Trees	√	√	√	√	√	√	√	√	√	√
Hashing	√	√	v	√	√		√	√	√	√

Learning Method /ILOs Matrix										
Learning Methods	**Knowledge & understanding**			**Intellectual skills**			**Professinal and practical skills**		**General and transferable skills**	
	a1	a2	a3	b1	b2	b3	c1	c2	d1	d2
Lectures	√	√	√	√	√	√				
Practical Lab	√	√	√	√	√	√	√	√	√	√
Reading material	√	√	√	√	√	√	√	√	√	√
Websites search	√	√	√	√	√		√	√	√	√
Research and reporting	√	√	√	√	√	√	√	√		
Group work									√	√
Case study	√	√	√	√	√	√	√	√	√	√
Discussions.	√	√	√	√	√	√	√	√	√	√

Assessment Methods /ILOs Matrix											
Assessment Methods	**Knowledge & understanding**				**Intellectual skills**			**Professinal and practical skills**		**General and transferable skills**	
	a1	a2	a3	a4	b1	b2	b3	c1	c2	d1	d2
Mid Term Exam	√	√	√	√	√	√	√				
Practical Exam								√	√		
Final Exam	√	√	√	√	√	√	√				
Course Work &Quizzes	√	√	√	√	√	√	√	√	√	√	√

Course ILOs Vs Program ILOs											
Prog ILOs / **Course ILOs**		**Knowledge & understanding**				**Intellectual skills**		**Professinal and practical skills**		**General and transferable skills**	
		A2	A8	A13	A14	B2	B13	**C1**	C7	D1	D2
Knowledge and Understanding	**a1**		✓								
	a2			✓	✓						
	a3	✓									
Intellectual skills	**b1**					✓	✓				
	b2					✓	✓				
	b3					✓	✓				
Professional and practical skills	**c1**							✓			
	c2								✓		
General skills	**d1**										✓
	d2									✓	

Course Coordinator : Dr.Osama Shafik Elshehry (   )
Head of Department : Dr. Ahmed El-Abbassy (   )
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