Course specification

(4202 Multimedia)

Faculty:	*HICIT- **Higher Institute for Computers & Information Technology**-El Shorouk Academy*
Programme(s) on which the course is given:	Under graduate program in Computer Science
Major or minor element of programme:	Compulsory
Department offering the programme	Department of Computer Science
Department offering the course:	Department of Computer Science
Year / Class	4th Year – 2nd semester
Date of specification approval	1/8/2022

A- Basic Information

Title: Database Systems	*Code:* 4202		
Weekly Hours:			
Lecture : 3	**Exercise: -**	**Practical :3**	**Total: 6**

B- Professional Information

1- **Course Aims:**
   o The objective of CS4202 is to teach the importance of multimedia systems.
   o Sampling and quantization process to transfer the multimedia to the digital form.
   o Multimedia and requirement to the encoding process and multimedia systems.
     • Digital audio, Synthesized audio & MIDI, Audio on the Internet & audio streaming, Speech recognition.
     • Computer graphics and images, Image formats and standards, Color models in images, Image compression.
     • Principles of animation, Digital video, Video compression, Video on the Internet & video streaming, Videoconferencing.
   o Multimedia software tools.
   o Issues in multimedia applications design.
   o Multimedia programming techniques.

2- **Program ILOs Covered by Course**

Program Intended Learning Outcomes			
Knowledge and understanding	**Intellectual Skills**	**Professional and practical skills**	**General and Transferable skills**
A14, A21	**B1, B3, B4, B8**	**C7, C8, C10**	**D5, D11, D12**

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3- Intended learning outcomes of course (ILOs)

a. Knowledge and Under-Standing:

a1- Definition of the basic concept of multimedia and why they are important to study. [A14]

a2- Explanation of the Sampling and quantization, sampling frequency and the NYQuist theorem. [A14,A21]

a3- Classification of the encoding techniques and metrics for encoding techniques. [A14,A21]

a4- Difference between Lossless and Lossy encoding techniques. [A14,A21]

b. Intellectual Skills:

b1– Apply Transformations to shapes. [B3,B4]

b2 – Analyze the Problem and decompose it to a set of tasks. [B1,B4,B8]

b3 – Discuss complex computation problems with less computational approaches.[B1,B3,B8]

c- Professional and practical skills

On successful completion of the course, the student should be able to:

c1- implement a multimedia based applications in 2D. [C10]

c2- use multimedia algorithms to encode data. [C8,C10]

c3- Design image encoding and decoding views. [C7,C8]

c4- Measure the sampling frequencies suitable for digitization of analog signals. [C7,C10]

c5- Perform systems analysis and design.[C7,C8,C10]

d- General and transferable skills

d1- Communicate with others; work in a team and involvement in group discussion and seminars. [D11,D12]

d2- Write Technical report . [D5,D12]

4- Contents

Topic	Hours	Lec.	Exc/Lab
Multimedia understanding and applications	6	3	3
Sampling and quantization	6	3	3
Encoding and decoding techniques metrics and classification	12	6	6
Lossless encoding technique part I	12	6	6
Lossless encoding technique part II	6	3	3
Lossy encoding technique part I	6	3	3
Lossy encoding technique part II	6	3	3
JPEG encoding	6	3	3
MPEG encoding	6	3	3
Information Hiding in multimedia files	6	3	3
Selected Topics	3	3	-
Course project	6	3	3

5- Teaching and learning methods

Teaching and learning methods	Used

Active Learning	
Lectures(blending learning – online learning using virtual classroom)	√
Tutorial Exercises (hybrid learning – online learning)	√
Practical Lab(blending learning– online learning)	√
Exercises	√
Discussions.	√
Self – Learning strategy	
Reading material	√
Websites search	√
Research and reporting	√
Self-studies	-
Experimental strategy	√
Group work	√
Presentation	√
Problem solving strategy	
Problem solving/problem solving learning based	√
Case study	√
Synchronous E-Learning	
Virtual lab	-
Virtual class	-
Chat Room	-
Video lectures	√
Asynchronous E-Learning	
E-Learning	√

6- Student assessment methods

Methods	Assessment	Used
Electronic Midterm Exam	To assess the knowledge and understanding achieved by the student during the previous weeks. (online on e-learning hub)	√
Pencil-to-Paper Final Exam	To evaluate what the student gain at the end of the course, and to assess: the knowledge and understanding, general skills, and intellectual skills.	√
Course Project	To allow students work in team, and to evaluate knowledge, understanding, intellectual, and transferable skills. (online on e-learning hub , FTF)	√
Electronic Course Work & Quizzes	To keep the student always in the course, and to evaluate knowledge, understanding, intellectual, and transferable skills.(online on e-learning hub)	√
Practical Exam	to measure the ability of students to design and implement a software program(FTF).	√

Participation	To assess the knowledge and understanding achieved by the student during the previous weeks.	√

Assessment Schedule

Assessment	Week #
Participation	3-14
Electronic Mid Term Exam	8
Final Exam	16
Electronic/ hard copy Course Project	3-14
Electronic/ hard copy Course Work &Quizzes	2-14
Practical Exam	15

Assessment Weight

Assessment	Weight %
Participation	5%
Electronic Mid Term Exam	
Final Exam	70%
Electronic / hard copy Course Project	10%
Electronic/ hard copy Course Work &Quizzes	5%
Practical Exam	10%
Total	100

–   Course Work &Quizzes:
  o   Short Exams, Assignments, Researches, Reports, Presentations on e-learning hub
  o   Class/Project discussion in a virtual classroom

6 -List of references

Essential books (text books)	- Hernandez, R. K., & Rue, J. (2015, July 10). *The Principles of Multimedia Journalism: Packaging Digital News*. – Sayood, K. (2017, October 23). *Introduction to Data Compression*. Morgan Kaufmann.
Course notes	– [www.studocu.com] – [www.tutorialspoint.com] – [jianhua.cis.k.hosei.ac.jp]
Recommended books	–Sencar, H. T., Verdoliva, L., & Memon, N. (Eds.). (2022, April 2). *Multimedia Forensics*. – McAnlis, C., & Haecky, A. (2016, July 26). *Understanding Compression: Data Compression for Modern Developers*.
Periodicals,website	**Powerpoint presentations of all course materials** **All labs material** **[https://moodle.sha.edu.eg/course/view.php?id=2270]**

7- Required Facilities

To assess professional and practical skills given the following facilities:

a. Tools & SW (Technologies facilities):
- **Visual Studio .Net**
- **Microsoft TEAMS to create virtual classrooms for lectures, discussions for project**
- **portal(MOODLE) to make electronic quizzes and electronic midterm exam**
- **portal(MOODLE) to upload project deliverable and assignment**
- **academy portal(MOODLE) to upload electronic material**

b. Teaching facilities:

	Lecture	class	Lab
Whiteboard	used	-	used
Pc/laptop	used	-	used
Data show	used	-	used
Webinars	MS TEAMS	-	MS TEAMS
SocialMedia	Facebook Page for 4th year	-	Facebook Page for 4th year
ChatRoom	ChatTeams	-	ChatTeams
Videos	Stream-MOODLE	-	Stream-MOODLE
Website	MOODLE	-	MOODLE

8- Course Matrices

8.1- Course Content/ILO Matrix

Course Contents	Knowledge and understanding				Intellectual skills			Professional and practical skills					General	
	a1	a2	a3	a4	b1	b2	b3	c1	c2	c3	c4	c5	d1	d2
Multimedia understanding and applications	x													
Sampling and quantization		x									x			
Encoding and decoding techniques metrics and classification	x													
Lossless encoding techniques part I		x		x	X	x	x							
Lossless encoding techniques part II		x	x	x				x	x		x			
Lossy encoding techniques part I				x	x									
Lossy encoding techniques part II			x	x					x					
JPEG encoding												X		
MPEG encoding												X		
Information Hiding in multimedia files		x	x	x				x	x		x	X		
Course Project													x	x

8.2- Learning Method /ILOs Matrix

Learning Methods	Knowledge and understanding				Intellectual skills				Professional and practical skills				General	
	a1	a2	a3	a4	b1	b2	b3	c1	c2	c3	c4	c5	d1	d2
Lectures	x	x	x	x	x	x	x	x	x	x	x	x		
Tutorial Exercises					x	x	x	x	x	x	x	x		

	a1	a2	a3	a4	b1	b2	b3	b4	c1	c2	c3	c4	d1	d2	d3	d4	d5
Reading material	x	x	x	x	x	x	x	x	x	x	x						
Websites search	x	x	x	x	x	x	x		x				x			x	x
Research and reporting		x			x	x			x	x	x		x				
Problem solving/problem solving learning based		x	x	x				x									
Group work									x	x	x	x	x	x	x		
Presentations															X	x	
Practical Lab					x	x	x	x	x	x	x	x	x				
Discussions.					x	x	x	x	x	x	x	x	x	x	x	x	x

8.3 Assessment Methods /ILOs Matrix

Assessment Methods	Knowledge & understanding				Intellectual skills				Professional & practical skills				General				
	a1	a2	a3	a4	b1	b2	b3	b4	c1	c2	c3	c4	d1	d2	d3	d4	d5
Electronic Mid Term Exam	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		
Final Exam	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		
Electronic Course Project	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Electronic Course Work &Quizzes	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Practical Exam	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		

9. Course ILOs Vs Program ILOs

Course ILOs / Prog ILOs	Knowledge & understanding		Intellectual skills				Professional and practical skills			General		
	A14	A21	B1	B3	B4	B8	C7	C8	C10	D5	D11	D12
K&U **a1**	√											
a2	√	√										
a3	√	√										
a4	√	√										
Int. **b1**				√	√							
b2			√		√	√						
b3			√	√		√						
P. &P. **c1**									√			
c2								√	√			
c3							√	√				
c4							√		√			
c5							√	√	√			
General **d1**											√	√
d2										√		√

Course Coordinator: Dr. Shaymaa Othman   **(**   **)**
Head of Department: Dr. Ahmed El-Abbassy   **(**   **)**
Date: 1/8/2022