Course specification

(4202 Multimedia)

Faculty: HICIT- **Higher Institute for Computers & Information Technology**
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: 22/2/2016

A- Basic Information

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

B- Professional Information

1- Course Objectives:

The objective of CS4202 is to teach Why multimedia systems? Sampling and quantization process to transfer the multimedia to the digital form. 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. Multimedia software tools. Issues in multimedia applications design. 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**

3 - Intended learning outcomes of course (ILOs)

a: Knowledge and Understanding

a1- Understand the basic concept of multimedia and why they are important to study.
a2- Explain the Sampling and quantization, sampling frequency and the NYQuist theorem
a3- Explain the Classification of the encoding techniques and metrics for encoding techniques
a4- Understand Loessless, and lossy encoding techniques

b: Intellectual skills

b1– Apply Transformations to shapes
b2 – Analyze the Problem and decompose it to a set of tasks.
b3 – Discuss complex computation problems with less computational approaches.

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.

c2- use multimedia algorithms to encoded data

c3- Design image encoding and decoding views.

c4- Measure the sampling frequencies suitable for digitization of analog signals .

c5- Perform systems analysis and design.

d: General and transferable skills

d1- Communicate with others; work in a team and involvement in group discussion and seminars.

d2- Write Technical report .

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 techniques part I	12	6	6
Lossless encoding techniques 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
Course Project	6	3	3

5-Teaching and learning methods

4.1 Lectures

4.2 Tutorial Exercises

4.3 Practical Lab

4.4 Discussions.

6- Student assessment methods

6.1 Midterm Exam: To assess the knowledge and understanding achieved by the student during the previous weeks.

6.2 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.

6.3 Course Project: To allow students work in team, and to evaluate knowledge, understanding, intellectual, and transferable skills.

6.4 Course Work & Quizzes: To keep the student always in the course, and to evaluate knowledge, understanding, intellectual, and transferable skills.

6.5 Practical Exam: to measure the ability of students to design and implement a software program.

Assessment Schedule

Assessment	Week #
Mid Term Exam	**8**
Final Exam	**16**
Course Project	**3-14**
Course Work &Quizzes	**2-14**

Practical Exam	**15**

Assessment Weight

Assessment	Weight %
Mid Term Exam	**5%**
Final Exam	**70%**
Course Project	**10%**
Course Work &Quizzes	**5%**
Practical Exam	**10%**
Total	**100**

Course Work &Quizzes: (Short Exams, Assignments, Researches, Reports, Presentations, Class/Project discussion)

7 -List of references

7.1 Text Books

- Principles of Multimedia, Ranjan Parekh and Ranjan , McGraw-Hill Education, 2006

8- Required Facilities

-Visual Studio .Net

9-Course Matrices

9.1-Course Content/ILOs Matrix

Course Contents	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														
MPEG encoding												x		
Information Hiding in multimedia files		x	x	x				x	x		x	x		
Course Project													x	x

9.2-Course Content/ILOs Matrix

Learning Methods	a1	a2	a3	a4	b1	b2	b3	c1	c2	c3	c4	c5	c6	d1	d2
Lectures	x	x	x	x	x	x	x	x	x	x	x	x	x		

Tutorial Exercises					x	x	x	x	x	x	x	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

9.3 Assessment Methods /ILO Matrix

Assessment Methods	**a1**	**a2**	**a3**	**a4**	**b1**	**b2**	**b3**	**c1**	**c2**	**c3**	**a4**	**a5**	**d1**	**d2**
Mid Term Exam	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		
Course Project	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Course Work &Quizzes	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		

Course Coordinator: Dr. Abdellatif Hussien **( )**
Head of Department: Dr. Farouk Shabaan **( )**
Date: 22/2/2016