ASSIUT UNIVERSITY

Faculty of Computers and Information

Department of Computer Science

Multimedia

Master Program

2022-2021

`

Assiut University

Faculty of Computers & Information

Multimedia Master Program

`

Table of Contents

Program Specifications **3**

Program Matrices **2**

Program Reports **2**

Program Courses Specifications, Matrices and Reports **11**

Master Thesis Specifications **40**

`

Program Specifications 2022-2021

A. Basic Information

1. **Program Title:** Master in Multimedia
2. **Program Type:** Single
3. **Faculty (Faculties):** Faculty of Computers and Information
4. **Department:** Multimedia
5. **Assistant Coordinator:** Prof. Dr. Khaled Fathy
6. **Coordinator:** Prof. Dr. Khaled Fathy
7. **Last date of program specifications approval:** 1/9/2021

B. Professional Information

1. Program Aims and Objectives

Successfully completing this program will contribute to some certain graduate attributes. Specifically, a graduate of Computers and Information (Multimedia) Master Program should be able to:

I. Be proficient in applying scientific research basics and methodologies and using its various tools in Multimedia.
II. Apply analytical methodologies and use it in Multimedia domains.
III. Apply specialized knowledge in computer science and merge it with other related knowledge of his/her professional practice.
IV. Be aware of current problems and vision of Multimedia.
V. Determine professional problems and find solutions for them.
VI. Master a suitable level of professional skills in Multimedia and use appropriate technology in his/her professional practices.
VII. Communicate effectively at work.
VIII. Lead team work and take decisions at different professional scenarios.
IX. Employ available resources efficiently to preserve them and maximize their utilization.
X. Show his/her awareness in community developing and preserving the environment according to the local and global changes.
XI. Act with integrity, credibility and applying the rules of the profession.
XII. Develop his/her professional and academic skills, and adopt life-long self-learning.

2. Intended Learning Outcomes (ILOs)

a. Knowledge and Understanding

Upon successful completion of the Multimedia Master's Program, graduates will demonstrate advanced knowledge and understanding in the following areas:

a1. Advanced Multimedia Theories and Concepts: Demonstrate a deep understanding of multimedia theories, design principles, and communication models. Explain the foundational and emerging concepts in multimedia technologies and their applications.
a2. Digital Media Technologies: Exhibit comprehensive knowledge of multimedia tools, software, and hardware used in content creation, editing, and distribution. Understand advanced technologies, including virtual reality (VR), augmented reality (AR), animation, and interactive media.

`

a3. Human-Computer Interaction (HCI): Analyze user experience (UX) and interface design principles for multimedia applications. Understand usability testing methods to optimize user interaction with multimedia products.
a4. Research Methodologies: Demonstrate knowledge of qualitative and quantitative research methodologies in multimedia studies. Understand data collection, analysis, and presentation techniques relevant to multimedia research. Quality principles of professional practice in computer science.
a5. Multimedia Project Management: Understand project management frameworks, tools, and methodologies for multimedia production. Identify key processes, timelines, and resource management strategies in multimedia projects.
a6. Emerging Trends and Technologies: Stay informed about current and emerging trends in multimedia, such as artificial intelligence (AI), extended reality (XR), and interactive storytelling. Recognize the potential impact of new technologies on multimedia industries.
a7. Legal and Ethical Standards: Understand legal considerations in multimedia production, including intellectual property rights and copyright laws. Demonstrate awareness of ethical standards and responsibilities in multimedia content creation and distribution.
a8. Cultural and Social Contexts: Analyze the social, cultural, and global impact of multimedia content. Understand how multimedia is used to address societal challenges, education, and cultural preservation.
a9. Multidisciplinary Integration: Understand how multimedia integrates with other disciplines, including marketing, education, entertainment, and healthcare. Explore cross-disciplinary approaches to multimedia problem-solving.

b. Intellectual Skills

By the end of the Multimedia Master's Program, graduates will be able to:

b1. Analyze and Evaluate: Examine multimedia tools and systems to identify strengths and weaknesses.
b2. Solve Problems Creatively: Develop innovative solutions to multimedia challenges.
b3. Conduct Research: Design and carry out research using appropriate methods and tools.
b4. Make Informed Decisions: Choose the best approaches for multimedia projects based on data and analysis.
b5. Think Abstractly and Logically: Apply logical reasoning to complex multimedia issues.
b6. Reflect and Improve: Assess their own work to identify areas for growth.
b7. Adapt to Change: Adjust to new multimedia technologies and trends.
b8. Integrate Knowledge: Combine ideas from different disciplines to create effective multimedia solutions.

c. Professional and Practical Skills

On successful completion of this program, graduates should be able to:

c1. Use Multimedia Tools: Operate advanced multimedia software and hardware effectively.
c2. Design Interactive Content: Create engaging multimedia applications, animations, and digital content.
c3. Develop Multimedia Solutions: Build multimedia systems tailored to specific user needs.
c4. Apply Industry Standards: Follow best practices, legal guidelines, and ethical principles in multimedia projects.
c5. Manage Projects: Plan, execute, and oversee multimedia projects efficiently.
c6. Conduct Usability Testing: Evaluate and improve user experience (UX) and interface design (UI).
c7. Collaborate in Teams: Work effectively with diverse teams on multimedia projects.
c8. Present Work Professionally: Communicate multimedia concepts and project outcomes clearly to different audiences.

General and Transferable Skills

On successful completion of this program, graduates should be able to:

`

d1. Communicate Effectively: Present ideas and multimedia concepts clearly in both written and verbal formats.
d2. Work in Teams: Collaborate effectively with team members from diverse backgrounds.
d3. Manage Time Efficiently: Prioritize tasks and meet project deadlines.
d4. Think Critically: Analyze situations, make informed decisions, and solve problems effectively.
d5. Adapt to Change: Respond flexibly to new challenges and evolving technologies.
d6. Use Digital Tools: Apply modern digital tools and technologies in various tasks.
d7. Lead and Motivate Teams: Demonstrate leadership and inspire team performance.
d8. Learn Independently: Take responsibility for ongoing self-learning and professional growth.

3. Academic Standards

The academic standards invoked in this specification are driven from the generic standards in the "Guide of Academic Standards for Graduate Programs" published by the National Authority for Quality Assurance & Accreditation (NAQAAE) on March 2009.

4. Curriculum Structure and Contents

4a. Program duration: at least 2 years.

4b. Program structure

- No. of hours per week: Lectures (10), Lab./Tut. (0), Total (10)
- No. of credit hours: Compulsory (40), Elective (6)
- No. of hours of basic computing: 8 credits, 40%
- No. of hours of specialized computer science courses: 12 credits, 60%
- Field Training: Not compulsory
- Program Levels (in credit-hours system): Not applicable.

5. Program Courses

5a. Compulsory Courses

Course Code / No.	Course Title	Units No	No. of hours /week			Year	Semester	Achieved ILOs
			Lect	Lab	Exer			
MM600	Advanced Topics in Using Deep Learning For Multimedia	4	2	–	–	1st	1st + 2nd	a1, a3, a6, a7, a8,b2, b3, b4, b6, b8, b11, c1, c3, c4, c7, c8,d1, d2, d4, d8, d11
MM601	Advanced Topics in Game Programming	4	2	–	–	1st	1st + 2nd	a1, a3, a6, a7, a8, b2, b3, b4, b6, b8, b11, c1, c3, c4, c7, c8, d1, d2, d4, d8, d11
T O T A L		12	6	–	–			

5b. Elective Courses

Course Code / No.	Course Title	Units No	No. of hours /week			Year	Semester	Achieved ILOs
			Lect.	Lab	Exer.			
1	Elective Course I	4	2	–	–	1st	1st + 2nd	a1, a2, a3, a5, a6, a7, a8, b1, b2, b3, b5, b6, b8, b11, c1, c3, c4, c7, c8, d1, d2, d4, d8, d11

`

Course Code / No.	Course Title	Units No	No. of hours / week			Year	Semester	Achieved ILOs
			Lect.	Lab	Exer.			
2	Elective Course II	4	2	–	–	1st	1st + 2nd	a1, a2, a3, a5, a6, a7, a8, b1, b2, b3, b5, b6, b8, b11, c1, c3, c4, c7, c8, d1, d2, d4, d8, d11
TOTAL		12	4	–	–			

Elective Course I		Elective Course II	
Course Code	Course Title	Course Code	Course Title
MM602	Multimedia Data Compression	MM604	Mobile Multimedia Systems
MM603	Multimedia Security	MM605	3D Visual Communication

5c. Master Thesis

No.	Title	Units No	Year	Semester	Achieved ILOs
1	Master Thesis	20	2nd	1st + 2nd	a2, a3, a4, a5, a6, a7, a8, a9, b1-b11, c1-c8, d2,d3,d4,d9-d11

6. Contents of Courses

Syllabus: See below

7. Program Admission Requirements

High score in secondary school education certificate in (mathematic section).

8. Regulations for progression and program completion

Please, refer to faculty bylaw (curriculum of undergraduate programs), 2004, pages 4-5.

9. Student Assessment (Methods and rules for student assessment)

Method (tool)	Intended leaning outcomes assessed
1- Written examinations	Knowledge and Understanding - Intellectual Skills - Professional Skills - General Skills
2- Oral examination	Knowledge and Understanding - Intellectual Skills - General Skills
3- Thesis	Knowledge and Understanding - Intellectual Skills - Professional Skills - General Skills

`

10. Program Evaluation

Evaluator	Tool	Sample
1- Senior students		
2- Alumni		
3- Stakeholders		
4- External Evaluator(s) (External Examiner(s))		
5- Other		

Program Coordinator: Prof. Dr. Khaled Fathy

Signature: 

Date: 01/9/2021

Department Head: Prof. Dr. Khaled Fathy

Signature: 

Date: 01/9/2021

Approved by the Dean: Prof. Taiseer Hassan Abdel-Hamid Sulaiman

Signature:

Date: 01/9/2021

`

Program Matrix

Program ILOs		a1	a2	a3	a4	a5	a6	a7	a8	a9	b1	b2	b3	b4	b5	b6	b7	b8	b9	b10	b11	c1	c2	c3	c4	c5	c6	c7	c8	d1	d2	d3	d4	d5	d6	d7	d8	d9	d10	d11
Courses and Thesis	MM600	✓		✓			✓	✓	✓			✓	✓	✓		✓		✓			✓	✓		✓	✓			✓	✓	✓	✓		✓				✓			✓
	MM601	✓		✓			✓	✓	✓			✓	✓	✓		✓		✓			✓	✓		✓	✓			✓	✓	✓	✓		✓				✓			✓
	EL1	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓		✓	✓		✓			✓	✓		✓	✓			✓	✓	✓	✓		✓				✓			✓
	EL2	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓		✓	✓		✓			✓	✓		✓	✓			✓	✓	✓	✓		✓				✓			✓
	Master Thesis		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓					✓	✓	✓

Program Report 2022-2021

A. Basic Information

1. **Program Name: M.Sc**. in Computers and Information (Multimedia)
2. **Program Type:**

Single	✓	Double		Multiple	

3. **Department:** Multimedia
4. **Coordinator:** Prof. Dr. Khaled Fathy
5. **External Evaluators:**
   - Prof. Ibrahim Elhenawy – Faculty of Computers and Information – Zagazig University
6. **Year of operation:** 2021-2022

B. Statistics

1. **No. of students starting the program: 2**
2. **Percentage of students passing in preparatory year:**

Course	%
Advanced Topics In Using Deep Learning For Multimedia	100
Advanced Topics In Game Programming	100
Elective (1)	100
Elective (2)	100

3. **No. of students completing the program and as a percentage of those who started**

	1
The percentage of students completing to those who started	**100%**

C. Professional Information

1. Achievement of program intended learning outcomes

	Program ILOs	a1	a2	a3	a4	a5	a6	a7	a8	a9	b1	b2	b3	b4	b5	b6	b7	b8	b9	b10	b11	c1	c2	c3	c4	c5	c6	c7	c8	d1	d2	d3	d4	d5	d6	d7	d8	d9	d10	d11
Courses and Thesis	CS611	✓		✓			✓	✓	✓			✓	✓	✓		✓		✓			✓	✓		✓	✓			✓	✓	✓	✓		✓				✓			✓
	CS612	✓		✓			✓	✓	✓		✓	✓	✓	✓		✓		✓			✓	✓		✓	✓			✓	✓	✓	✓		✓				✓			✓
	CE611	✓		✓			✓	✓	✓			✓	✓	✓		✓		✓			✓	✓		✓	✓			✓	✓	✓	✓		✓				✓			✓
	EL1	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓		✓	✓		✓			✓	✓		✓	✓			✓	✓	✓	✓		✓				✓			✓
	EL2	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓		✓	✓		✓			✓	✓		✓	✓			✓	✓	✓	✓		✓				✓			✓
	Master Thesis		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓					✓	✓	✓

2. Achievement of program aims

Based on the external and external evaluators' comments, the courses offered during the program levels could achieve the program aims.

3. Assessment methods

Different assessment methods were used during the levels of the program. These methods are:

a. Preparatory Year :

- Written examination (70%)
- Year Work (30%)

b. Thesis Defense

Based on the external and external evaluators' comments, these assessment methods are appropriate in order to assess student levels of achievement.

4. Number of Students who finished their Masters: 2

D. Quality of Learning Opportunities

1. Quality of teaching and learning

Based on the meeting with some stakeholders, the quality of the teaching and learning process which has been carried out in MM program is good. Students' opinions from all program levels have also supported this good level the teaching and learning process.

2. Effectiveness of student support systems

Students are supported through different systems which are summarized as follows.

- **Office Hours**: Academic extra office hours to meet students and reply their questions and queries.
- **Student Social Networks**: Academic and assistant staff interact with students through different social networks (Facebook, Twitter, LinkedIn, …)
- **Honor Prizes**: The University and the Faculty offer honor prizes for the distinguished students in sport, cultural and social activities.
- **Researches:** Publications in International Journals will be Financially honored from the university with impact factor**.**

3. Learning resources

3a. No. and ratio of faculty members and their assistants to students 2:3

3b. Matching of faculty members' specialization to program needs.

Available: ☑ May be: ☐ Unavailable: ☐
(Why) …..

3c. Availability and adequacy of program handbook

Available: ☐ May be: ☑ Unavailable: ☐
(Why) More copies of the textbooks are needed.

`

3d. Adequacy of library facilities.

Available: ☑ May be: ☐ Unavailable: ☐

(Why) ……

3e. Adequacy of laboratories

Available: ☑ May be: ☐ Unavailable: ☐

(Why) ……

3f. Adequacy of computer facilities

Available: ☑ May be: ☐ Unavailable: ☐

(Why) ……

3g. Adequacy of field/practical training resources

Available: ☐ May be: ☑ Unavailable: ☐

(Why) The program should offer more practical courses related to the market.

3h. Adequacy of any other program needs

Available: ☑ May be: ☐ Unavailable: ☐

(Why) ……

4. Quality management

4a. Availability of regular evaluation and revision system for the program

Available: ☑ May be: ☐ Unavailable: ☐

(Why) ……

4b. Effectiveness of the system

Efficient: ☑ May be: ☐ Inefficient: ☐

(Why) ……

4c. Effectiveness of Faculty and University laws and regulations for progression and completion

Efficient: ☑ Inefficient: ☐

(Why) ……

4d. Effectiveness of program external evaluation system:

i. External evaluators

Efficient: ☑ May be: ☐ Inefficient: ☐

(Why) ……

ii. Students

Efficient: ☑ May be: ☐ Inefficient: ☐

(Why) ……

iii. Other stakeholders

Efficient: ☐ May be: ☑ Inefficient: ☐

(Why) The response of the stakeholders is still limited since most of the program graduates work in Cairo.

4e. Faculty response to student and external evaluations

- **For students 'comments :**
  1- Increase Self – Learning
  2- Motivate Students More

External Evaluators' Comments	Reasons

`

No Comments	

5. Progress of previous year's action plan

Actions	Person Responsible	Completion		Reasons for non-completion
		Yes	No	
-	-	-	-	-

6. Action plan

Actions	Person Responsible	Completion Date

Program Coordinator: Prof. Dr. Khaled Fathy

Signature: 

Date: 01/9/2021

Department Head: Prof. Dr. Khaled Fathy

Signature: 

Date: 01/9/2021

`

Courses Specifications and Reports 2022-2021

`

Advanced Topics in Using Deep Learning For Multimedia

MM600

Relevant program	Master in Computers and Information (Multimedia)
Department offers the program	Multimedia
Department offers the course	Multimedia
Academic year	1st Year
Date of specification approval	01/9/2021

A. Basic Information

1. **Course Title:** Advanced Topics in Using Deep Learning For Multimedia
2. **Course Code:** MM600
3. **Course hours per week:**

Lecture	Tutorial / Practical	Total
2	–	2

B. Professional Information

1. Overall aims of the course

Upon completing this course the student will have learned, through appropriate classroom and laboratory experiences, the following:

- Advanced Deep Learning Techniques: Understand cutting-edge deep learning models (e.g., CNNs, GANs, RNNs) for multimedia applications.
- Apply Deep Learning to Multimedia: Use deep learning for tasks like image, video, and audio classification, detection, and generation.
- Enhance Multimedia Creation: Explore how deep learning can improve content creation, such as image enhancement and video generation.
- Develop Multimedia Retrieval Systems: Create systems for multimedia content search, tagging, and recommendation using deep learning.
- Understand Deep Learning with Multimedia Tech: Learn how deep learning interacts with multimedia technologies like AR/VR and real-time systems.
- Solve Real-World Multimedia Problems: Tackle industry challenges with deep learning, such as processing large-scale data and real-time tasks.
- Encourage Innovation and Research: Promote exploration of new, creative uses of deep learning in multimedia through research projects.

`

2. Intended Learning Outcomes (ILOs) of the course

a. Knowledge and Understanding

On successful completion of the program, graduates should be able to:

a1. Understand Deep Learning Models: Demonstrate an understanding of advanced deep learning models (e.g., CNNs, GANs, RNNs) and their applications to multimedia tasks.

a2. Explain Key Concepts: Understand key concepts in deep learning for multimedia, such as neural networks, training methods, data augmentation, and evaluation metrics.

a3. Identify Multimedia Challenges: Identify the challenges in applying deep learning to multimedia data, including large-scale data processing, real-time application, and ethical considerations.

b. Intellectual Skills

On successful completion of this program, graduates should be able to:

b1. Analyze Deep Learning Algorithms: Critically analyze and evaluate the performance of different deep learning algorithms in multimedia tasks (e.g., image classification, video recognition).

b2. Solve Complex Problems: Apply deep learning techniques to solve real-world multimedia problems, such as improving image quality or enhancing video content.

b3. Conduct Independent Research: Design and carry out research on innovative applications of deep learning in multimedia, drawing on recent advancements in the field.

c. Professional and Practical Skills

On successful completion of this program, graduates should be able to:

c1. Develop Multimedia Applications: Implement deep learning models to create multimedia applications, such as image and video recognition systems or content generation tools.

c2. Use Deep Learning Frameworks: Use popular deep learning frameworks (e.g., TensorFlow, PyTorch) to build and train models for multimedia tasks.

c3. Test and Evaluate Models: Test deep learning models on multimedia data and evaluate their performance using appropriate metrics.

c4. Collaborate on Projects: Work collaboratively in teams to design, implement, and present deep learning solutions for multimedia projects.

d. General and Transferable Skills

On successful completion of this program, graduates should be able to:

d1. Communicate Technical Information: Present complex deep learning concepts and multimedia solutions clearly to both technical and non-technical audiences.

d2. Adapt to Emerging Technologies: Stay up-to-date with the latest developments in deep learning and multimedia technologies and apply them effectively to new challenges.

d3. Work Under Deadlines: Manage time effectively to complete deep learning projects on time, demonstrating professionalism and efficiency.

`

3. Contents

No	Topic taught	No. of hours		ILOs
		Lecture	Tut/Prac	
1	Overview of deep learning principles	18	–	a1-a5, b1-b4, c1-c4, d1-d5
2	Importance of deep learning in multimedia applications	16	–	a1-a4, a6, b1-b6, c1-c6, d1-d5
3	Convolutional Neural Networks (CNNs) for image classification, segmentation, and object detection	12	–	a1-a4, a6,b1-b6, c1-c6, d1-d5
4	Transfer learning for image tasks (pre-trained models)	10	–	a1-a4, a6, b1-b6, c1-c6, d1-d5

4. Teaching and Learning Methods

4a. Lectures

4b. Tutorial Exercises

4c. Workshops

4d. Projects

5. Student Assessment

5a. Tools

Final Exam	To measure knowledge, understanding, intellectual professional and general skills
Projects	To measure professional and general skills

5b. Time Schedule

Assessment	Week No
Final Exam	30

5c. Grading System

Assessment	**Grade %**
Final Exam	70%
Year Work	30%

5d. Formative Assessment

Regular quizzes distributed along the whole semester.

6. List of References

6a. Course Notes

- Short course notes available at the course homepage.

6b. Required Books (Textbooks)

- .

6c. Recommended Books

- .

6d. Web Sites

- Course homepage is accessed from the FCI website: http://fci.aun.edu.eg/

7. Facilities Required for Teaching and Learning

- A lecture hall equipped with projectors and computers.
- Labs equipped with computers and Internet facilities.
- A library.

`

Course Coordinator: Dr. Mohamed Mustafa Darwish

Signature:

Date: 01/9/2021

Department Head: Prof. Dr. Khaled Fathy

Signature: 

Date: 01/9/2021

Course Matrix

Course Name	Advanced Topics in Using Deep Learning For Multimedia	Course Code	MM600

Course Aims	Course Content	Teaching Weeks	ILOs				Teaching and Learning Methods							Assessment Tools	Criteria
			a's	b's	c's	d's	Lectures	Tutorial	Practical	Workshops	Projects	Case Study	Data Collections	Final Exam	
• Advanced Deep Learning Techniques: Understand cutting-edge deep learning models for multimedia applications. • Apply Deep Learning to Multimedia: Use deep learning for tasks like image, video, and audio classification, detection, and generation. • Enhance Multimedia Creation: Explore how deep learning can improve content creation, such as image enhancement and video generation. • Innovation and Research: Promote exploration of new, creative uses of deep learning in multimedia through research projects.	Background on signals, information theory, transforms, human vision, and metrics.	1-9	1-5	1-4	1-4	1-5	✓	✓						✓	
	Lossless and lossy compression techniques. Video compression.	10-17	1-4, 6	1-6	1-6	1-5	✓	✓						✓	
	Compression standards.	18-23	1-4, 6	1-6	1-6	1-5	✓	✓						✓	
	Progressive transmission.	24-28	1-4, 6	1-6	1-6	1-5	✓	✓						✓	

Course Coordinator	Dr. Mohamed Mustafa Darwish	Department Head	Prof. Dr. Khaled Fathy
Signature		Signature	Khaled fathy Hussein

- **Basic Information**
- **Course Title:** Advanced Topics in Using Deep Learning For Multimedia
- **Course Code:** MM600
- **Programs on which this course is given:** M.Sc. in Computers and Information (Multimedia).
- **Year / Level of Programs:** 1st level
- **Course hours per week:**

Lecture	Tutorial / Practical	Total
2	-	2

- **Names of lecturers contributing to the delivery of the course:**
- **Course Coordinator:** Dr. Mohamed Mustafa Darwish
- **External Evaluator:** Prof. Dr. Khaled Fathy

- **Statistical Information**

No. of students attending the course: No. 2 % 100

No. of students completing the course: No. 2 % 88.88

Results:

Passed: No. 2 % 100 Failed: No. 0 % 0

Grading of successful students:

Excellent: No. 2 % 100 Very Good: No. 0 % 0

Good: No. 0 % 0 Pass: No. 0 % 0

Professional Information

- **Course Teaching**

No	Topic actually taught	No. of hours	Lecturer
1	Overview of deep learning principles	12	Dr. Mohamed Mustafa Darwish
2	Importance of deep learning in multimedia applications	14	
3	Convolutional Neural Networks (CNNs) for image classification, segmentation, and object detection	18	
4	Transfer learning for image tasks (pre-trained models)	12	

`

Topics taught as a percentage of the content specified:

> 90 %		70-90 %	✓	<70%	

Reasons in detail for not teaching any topic:

If any topics were taught which are not specified, give reasons in detail:

No.	Topics	Reasons
	–	–

- **Teaching and Learning Methods**

Lectures:	✓
Practical training / Laboratory:	
Seminar / Workshop:	✓
Class activity:	✓
Case study:	
Assignments/Homework:	✓

If teaching and learning methods were used other than those specified, list and give reasons:

Method	Reasons

- **Student Assessment**

Assessment	Grade %
Final Exam	70%
Year Work	30%

Members of examination committee:

- Prof. Dr. Khaled Fathy

Role of external evaluator:

- To verify that academic standards are appropriate for the award
- To verify that the assessment methods fairly assess the range of specified Intended Learning Outcomes
- To review and evaluate the course specifications and reports and provide a review report about them.

- **Facilities and Teaching Materials**

Totally adequate	✓
Adequate to some extent	
Inadequate	

List any inadequacies:

- No inadequacy.

- **Administrative Constraints**

List any difficulties encountered:

- No difficulty.

- **Student Evaluation of the Course**

No	Evaluation Items	Agree	Agree to some extent	Disagree
1	Lecturer	-	-	-
2	Course	-	-	-

`

3	**Facilities**	-	-	-
4	**Teaching Assistants**	-	-	-

Criticisms	Response of course team
-	-

- **Comments from external evaluator(s)**

Comments	Response of course team
-	-

- **Course Enhancement**

Progress on actions identified in the previous year's action plan:

Actions	Completion		Reasons for non-completion
	Yes	No	
No Action	-	-	-

- **Action plan for academic year 2021 - 2022**

Actions Required	Completion Date	Person Responsible

Course Coordinator: Dr. Mohamed Mustafa Darwish

Signature:

Date: 1/9/2021

`

Advanced Topics in Game Programming

MM601

Relevant program	Master in Computers and Information (Multimedia)
Department offers the program	Multimedia
Department offers the course	Multimedia
Academic year	1st Year
Date of specification approval	01/9/2021

A. Basic Information

1. **Course Title:** Advanced Topics in Game Programming
2. **Course Code:** MM601
3. **Course hours per week:**

Lecture	Tutorial / Practical	Total
2	–	2

B. Professional Information

1. Overall aims of the course

Upon completing this course the student will have learned, through appropriate classroom and laboratory experiences, the following.

- Explore Advanced Game Programming Techniques: Introduce cutting-edge programming techniques for building complex game systems, including physics engines, AI behavior, and procedural content generation.
- Develop Real-Time Game Systems: Enable students to design and implement real-time rendering, game loops, and performance-optimized systems for smooth gameplay experiences.
- Enhance Problem-Solving and Debugging Skills: Equip students with advanced problem-solving techniques to identify, debug, and resolve performance and gameplay issues in game development.
- Integrate Artificial Intelligence in Games: Teach students to design and implement AI-driven characters, pathfinding algorithms, and decision-making systems in games.
- Explore Multiplayer and Networked Game Development: Introduce concepts of multiplayer programming, real-time networking, and server-client architecture for online and collaborative gaming experiences.
- Work with Advanced Game Engines: Provide hands-on experience with industry-standard game engines (e.g., Unity, Unreal Engine) and scripting languages for advanced game development.
- Incorporate Emerging Technologies: Explore the integration of emerging technologies like Virtual Reality (VR), Augmented Reality (AR), and cloud gaming into game programming.
- Foster Creativity and Innovation: Encourage students to experiment with creative and innovative game ideas while balancing technical feasibility and user experience.
- Develop Teamwork and Collaboration Skills: Promote collaboration in team-based game development projects, reflecting industry-standard workflows and practices.

`

- Prepare for Industry and Research Careers: Equip students with the knowledge and skills necessary to excel in game development roles or pursue advanced research in game technologies.

2. Intended Learning Outcomes (ILOs) of the course

a. Knowledge and Understanding

On successful completion of the program, graduates should be able to:

a1. Understand Advanced Game Programming Concepts: Explain advanced concepts in game programming, including game physics, AI behavior, and procedural generation.
a2. Identify Real-Time System Requirements: Understand the requirements and constraints of real-time systems in game development.
a3. Explain Multiplayer and Network Architecture: Describe the principles of networked game development, including server-client architecture and latency management.
a4. Explore Emerging Game Technologies: Identify how emerging technologies like VR, AR, and cloud gaming are applied in game development.
a5. Understand Ethical and Legal Issues: Recognize ethical and legal issues in game programming, including intellectual property rights and data privacy.

b. Intellectual Skills

On successful completion of this program, graduates should be able to:

b1. Analyze Game Design Challenges: Evaluate and solve complex problems related to game performance, AI behavior, and real-time rendering.
b2. Optimize Game Performance: Apply techniques for optimizing game performance, including memory management and efficient rendering pipelines.
b3. Develop AI-Driven Game Systems: Design and implement AI algorithms for pathfinding, decision-making, and non-player character (NPC) behavior.
b4. Evaluate Multiplayer Architectures: Critically analyze multiplayer and networked game architectures for scalability and performance.

c. Professional and Practical Skills

On successful completion of this program, graduates should be able to:

c1. Develop Advanced Game Features: Design and implement complex game mechanics and systems using industry-standard tools and engines (e.g., Unity, Unreal Engine).
c2. Implement Real-Time Systems: Build and optimize real-time rendering and physics systems for smooth gameplay experiences.
c3. Build Multiplayer and Networked Games: Develop networked games with reliable server-client communication and latency management.
c4. Integrate Emerging Technologies: Apply technologies like AR, VR, and cloud computing in game development projects.
c5. Debug and Troubleshoot: Identify and fix bugs, glitches, and performance bottlenecks in game projects.

d. General and Transferable Skills

On successful completion of this program, graduates should be able to:

d1. Collaborate in Teams: Work effectively in team-based projects using industry-standard collaboration tools and workflows.
d2. Manage Projects Efficiently: Demonstrate project management skills, including planning, time management, and task prioritization.
d3. Communicate Effectively: Present game development ideas, concepts, and technical solutions clearly to diverse audiences.
d4. Adapt to New Technologies: Stay updated with evolving game programming trends and technologies.
d5. Think Creatively and Innovatively: Apply creativity to solve technical and design challenges in game programming.

`

3. Contents

No	Topic taught	No. of hours		ILOs
		Lecture	Tut/Prac	
1	Learn about advanced tools, game engines, and real-time systems.	16	–	a1-a6, b1-b4, c1-c4, d1-d5
2	Automatically generate game levels, textures, and environments.	20	–	a1-a5,a7, b1-b6, c1-c6, d1-d5
3	Improve game visuals using advanced rendering and optimization techniques and Design immersive experiences with Virtual and Augmented Reality.	20	–	a1-a5,a7 b1-b6, c1-c6, d1-d5

4. Teaching and Learning Methods

4a. Lectures

4b. Tutorial Exercises

4c. Workshops

4d. Projects

5. Student Assessment

5a. Tools

Final Exam	To measure knowledge, understanding, intellectual professional and general skills.
Projects	To measure professional and general skills

5b. Time Schedule

Assessment	Week No
Final Exam	30

5c. Grading System

Assessment	**Grade %**
Final Exam	70%
Year Work	30%

5d. Formative Assessment

Regular quizzes distributed along the whole semester.

6. List of References

6a. Course Notes

- Short course notes available at the course homepage.

6b. Required Books (Textbooks)

- .

6c. Recommended Books

- .

6d. Web Sites

- Course homepage is accessed from the FCI website: http://fci.aun.edu.eg/

7. Facilities Required for Teaching and Learning

- A lecture hall equipped with projectors and computers.
- Labs equipped with computers and Internet facilities.
- A library.

`

Course Coordinator: Prof. Dr. Khaled Fathy

Signature: 

Date: 01/9/2021

Department Head: Prof. Dr. Khaled Fathy

Signature: 

Date: 01/9/2021

Course Matrix

Course Name	Advanced Topics in Game Programming	**Course Code**	MM601

Course Aims	**Course Content**	**Teaching Weeks**	**ILOs**				**Teaching and Learning Methods**							**Assessment Tools**	**Criteria**
			a's	**b's**	**c's**	**d's**	**Lectures**	**Tutorial**	**Practical**	**Worksho**	**Projects**	**Case**	**Data**	**Final Exam**	
• Explore Advanced Game Programming Techniques: Introduce cutting-edge programming techniques for building complex game systems, including physics engines, AI behavior, and procedural content generation. • Develop Real-Time Game Systems: Enable students to design and implement real-time rendering, game loops, and performance-optimized systems for smooth gameplay experiences. • Enhance Problem-Solving and Debugging Skills: Equip students with advanced problem-solving techniques to identify, debug, and resolve performance and gameplay issues in game development.	Learn about advanced tools, game engines, and real-time systems.	1-8	1-6	1-4	1-4	1-5	✓	✓						✓	
	Automatically generate game levels, textures, and environments.	9-18	1-5, 7	1-6	1-6	1-5	✓	✓						✓	
	Improve game visuals using advanced rendering and optimization techniques and Design immersive experiences with Virtual and Augmented Reality.	19-28	1-5, 7	1-6	1-6	1-5	✓	✓			✓	✓		✓	

Course Coordinator	Prof. Dr. Khaled Fathy	Department Head	Prof. Dr. Khaled Fathy
Signature	Khaled Fathy Hussein	Signature	Khaled Fathy Hussein

- **Basic Information**
  - **Course Title:** Advanced Topics in Game Programming
  - **Course Code:** MM601
  - **Programs on which this course is given:** M.Sc. in Computers and Information (Multimedia).
  - **Year / Level of Programs:** 1st level
  - **Course hours per week:**

Lecture	Tutorial / Practical	Total
2	-	2

  - **Names of lecturers contributing to the delivery of the course:**
    - **Course Coordinator:** Prof. Dr. Khaled Fathy
    - **External Evaluator:** Prof. Dr. Khaled Fathy

- **Statistical Information**

No. of students attending the course: No. 2 % 100

No. of students completing the course: No. 2 % 100

Results:

Passed: No. 2 % 100 Failed: No. 0 % 0

Grading of successful students:

Excellent: No. 2 % 100 Very Good: No. 0 % 0

Good: No. 0 % 0 Pass: No. 0 % 0

- **Professional Information**

- **Course Teaching**

No	Topic taught	No. of hours		ILOs
		Lecture	Tut/Prac	
1	Learn about advanced tools, game engines, and real-time systems.	8		a1-a5, b1, c1,c3-c4, d2-d3
2	Automatically generate game levels, textures, and environments.	8		a1-a5, b1, c1,c3-c4, d2-d3

`

3	Improve game visuals using advanced rendering and optimization techniques and Design immersive experiences with Virtual and Augmented Reality.	10		a1-a7, b1-b6, c1-c6, d2,d4,d5
4	Learn about advanced tools, game engines, and real-time systems.	10		a1-a7, b1-b6, c1-c6, d2,d4,d5
5	Automatically generate game levels, textures, and environments.	20		a1-a5,a7, b1-b6, c1-c6, d1-d5

Topics taught as a percentage of the content specified:

> 90 % [ ] 70-90 % [✓] <70% [ ]

Reasons in detail for not teaching any topic:

If any topics were taught which are not specified, give reasons in detail:

No.	Topics	Reasons
	–	–

- **Teaching and Learning Methods**

Lectures:	✓
Practical training / Laboratory:	
Seminar / Workshop:	✓
Class activity:	✓
Case study:	
Assignments/Homework:	✓

If teaching and learning methods were used other than those specified, list and give reasons:

Method	Reasons

- **Student Assessment**

Assessment	Grade %
Final Exam	70%
Year Work	30%

Members of examination committee:

Prof. Dr. Khaled Fathy

Role of external evaluator:

- To verify that academic standards are appropriate for the award
- To verify that the assessment methods fairly assess the range of specified Intended Learning Outcomes
- To review and evaluate the course specifications and reports and provide a review report about them.

- **Facilities and Teaching Materials**

Totally adequate	✓
Adequate to some extent	

`

Inadequate

List any inadequacies:

- No inadequacy.

- **Administrative Constraints**

List any difficulties encountered:

- No difficulty.

- **Student Evaluation of the Course**

No	Evaluation Items	Agree	Agree to some extent	Disagree
1	**Lecturer**	-	-	-
2	**Course**	-	-	-
3	**Facilities**	-	-	-
4	**Teaching Assistants**	-	-	-

Criticisms	Response of course team
-	-

- **Comments from external evaluator(s)**

Comments	Response of course team

- **Course Enhancement**

Progress on actions identified in the previous year's action plan:

Actions	Completion		Reasons for non-completion
	Yes	No	
No Action	-	-	-

- **Action plan for academic year 2021 - 2022**

Actions Required	Completion Date	Person Responsible

Course Coordinator: Prof. Dr. Khaled Fathy

Signature: 

Date: 1/9/2021

`

Multimedia Data Compression

MM602

Relevant program	Master in Computers and Information (Multimedia)
Department offers the program	Multimedia
Department offers the course	Multimedia
Academic year	1st Year
Date of specification approval	01/9/2021

A. Basic Information

1. **Course Title:** Multimedia Data Compression
2. **Course Code:** MM602
3. **Course hours per week:**

Lecture	Tutorial / Practical	Total
2	–	2

B. Professional Information

1. Overall aims of the course

Upon completing this course the student will have learned, through appropriate classroom and laboratory experiences, the following:

- Understand the fundamentals of data compression and its role in multimedia systems.
- Explore various compression algorithms and techniques used for text, image, audio, and video data.
- Equip students with the skills to design and implement efficient compression systems for multimedia applications.
- Analyze trade-offs between compression ratio, quality, and performance in real-world multimedia scenarios.
- Foster awareness of industry standards (e.g., JPEG, MPEG, H.264, HEVC).

2. Intended Learning Outcomes (ILOs) of the course

a. Knowledge and Understanding

On successful completion of the program, graduates should be able to:

a1. Explain the basic principles and techniques of multimedia data compression.
a2. Understand lossless and lossy compression algorithms.
a3. Describe standard compression formats (e.g., JPEG, PNG, MP3, MPEG, H.265).
a4. Recognize the applications of data compression in multimedia storage, streaming, and communication.

`

b. Intellectual Skills

On successful completion of this program, graduates should be able to:

b1. Solve Analyze different compression algorithms and evaluate their efficiency and performance.
b2. Identify suitable compression techniques for different types of multimedia data.
b3. Solve real-world multimedia compression problems by applying appropriate algorithms.

c. Professional and Practical Skills

On successful completion of this program, graduates should be able to:

c1. Master Implement multimedia compression algorithms using programming languages or tools.
c2. Optimize storage and transmission efficiency of multimedia data.
c3. Work with standard compression tools and libraries (e.g., FFmpeg, OpenCV).

d. General and Transferable Skills

On successful completion of this program, graduates should be able to:

d1. Communicate complex compression concepts effectively.
d2. Work in teams to develop compression-based solutions.
d3. Adapt to emerging multimedia compression technologies.

3. Contents

No	Topic taught	No. of hours		ILOs
		Lecture	Tut/Prac	
1	Introduction to Data Compression: Basics, need, and importance.	16	–	a1-a4, b1-b3, c1-c4, d1-d5
2	Lossless Compression Techniques: Run-Length Encoding (RLE), Huffman Coding, Arithmetic Coding.	24	–	a1-a5 b1-b5, c1-c6, d1-d5
3	Lossy Compression Techniques: Transform Coding, Quantization, and Bitrate Control.	16	–	a1-a4,a6, b1-b5, c1-c6, d1-d5

4. Teaching and Learning Methods

4a. Lectures
4b. Tutorial Exercises
4c. Workshops
4d. Projects

5. Student Assessment

5a. Tools

Final Exam	To measure knowledge, understanding, intellectual professional and general skills.
Projects	To measure professional and general skills

5b. Time Schedule

Assessment	Week No
Final Exam	30

5c. Grading System

`

Assessment	Grade %
Final Exam	70%
Year Work	30%

5d. Formative Assessment

Regular quizzes distributed along the whole semester.

6. List of References

6a. Course Notes

- Short course notes available at the course homepage.

6b. Required Books (Textbooks)

- .

6c. Recommended Books

- .

6d. Web Sites

- Course homepage is accessed from the FCI website: http://fci.aun.edu.eg/

7. Facilities Required for Teaching and Learning

- A lecture hall equipped with projectors and computers.
- Labs equipped with computers and Internet facilities.
- A library.

Course Coordinator:

Signature:

Date: 01/9/2021

Department Head: Prof. Dr. Khaled Fathy

Signature: 

Date: 01/9/2021

Course Matrix

Course Name	Multimedia Data Compression	**Course Code**	MM602

Course Aims	**Course Content**	**Teaching Weeks**	**ILOs**				**Teaching and Learning Methods**							**Assessment Tools**	**Criteria**
			a's	**b's**	**c's**	**d's**	**Lectures**	**Tutorial**	**Practical**	**Workshops**	**Projects**	**Case Study**	**Data Collections**	**Final Exam**	
• Understand the fundamentals of data compression and its role in multimedia systems. • Explore various compression algorithms and techniques used for text, image, audio, and video data. • Equip students with the skills to design and implement efficient compression systems for multimedia applications. • Analyze trade-offs between compression ratio, quality, and performance in real-world multimedia scenarios. • Foster awareness of industry standards (e.g., JPEG, MPEG, H.264, HEVC).	Introduction to Data Compression: Basics, need, and importance.	1-8	1-4	1-3	1-4	1-5	✓	✓						✓	
	Lossless Compression Techniques: Run-Length Encoding (RLE), Huffman Coding, Arithmetic Coding.	9-20	1-5	1-5	1-6	1-5	✓	✓						✓	
	Lossy Compression Techniques: Transform Coding, Quantization, and Bitrate Control.	21-28	1-4, 6	1-5	1-6	1-5	✓	✓						✓	

Course Coordinator		Department Head	Prof. Dr. Khaled Fathy
Signature		Signature	Khaled Fathy Hussein

Course Report

This course was not studied for the academic year 2022-2021

`

Multimedia security

MM603

Relevant program	Master in Computers and Information (Multimedia)
Department offers the program	Multimedia
Department offers the course	Multimedia
Academic year	1st Year
Date of specification approval	01/9/2021

A. Basic Information

1. **Course Title:** Multimedia security
2. **Course Code:** MM603
3. **Course hours per week:**

Lecture	Tutorial / Practical	Total
2	–	2

B. Professional Information

1. Overall aims of the course

Upon completing this course the student will have learned, through appropriate classroom and laboratory experiences, the following.

- Provide students with an understanding of multimedia security principles and their importance in protecting digital content.
- Explore encryption, watermarking, and authentication techniques for multimedia data.
- Equip students with the skills to detect and prevent security breaches in multimedia systems.
- Analyze threats, vulnerabilities, and attacks specific to multimedia content (e.g., piracy, forgery).
- Familiarize students with industry standards and legal frameworks related to multimedia security.

2. Intended Learning Outcomes (ILOs) of the course

a. Knowledge and Understanding

On successful completion of the program, graduates should be able to:

a1. Understand the fundamental concepts of multimedia security and digital rights management (DRM).
a2. Explain techniques for encryption, steganography, and digital watermarking.
a3. Identify common threats and attacks on multimedia data.
a4. Understand authentication and access control mechanisms for multimedia systems.

`

a5. Recognize legal and ethical aspects of multimedia security.

b. Intellectual Skills

On successful completion of this program, graduates should be able to:

b1. Analyze multimedia systems for potential security vulnerabilities.
b2. Evaluate security algorithms and protocols used in multimedia protection.
b3. Design secure systems for multimedia data storage and transmission.
b4. Develop strategies to prevent multimedia piracy and tampering.

c. Professional and Practical Skills

On successful completion of this program, graduates should be able to:

c1. Apply encryption and watermarking techniques to protect multimedia data.
c2. Use tools and software for multimedia security analysis.
c3. Implement secure transmission protocols for multimedia communication.
c4. Detect and mitigate security threats in multimedia systems.

d. General and Transferable Skills

On successful completion of this program, graduates should be able to:

d1. Communicate security concepts effectively with technical and non-technical audiences.
d2. Work in teams to design and implement secure multimedia applications.
d3. Adapt to emerging security technologies and trends.
d4. Develop problem-solving skills in real-world security scenarios.

3. Contents

No	Topic taught	No. of hours		ILOs
		Lecture	Tut/Prac	
1	Introduction to Multimedia Security and Importance of securing multimedia content, Threats and vulnerabilities	20	–	a1-a7, b1-b6, c1,c5, d1-d5
2	Cryptography for Multimedia, Symmetric and asymmetric encryption techniques. Applications in multimedia systems. Digital Watermarking Invisible and visible watermarking, Robustness and imperceptibility.	16	–	a1-a6, b1-b7, c1,c7, d1-d5
3	Steganography: Techniques for hiding information in multimedia files. Detection and prevention of steganographic attacks. Authentication and Integrity Verification: Hash functions and digital signatures, Multimedia content verification.	16	–	a1-a6,a8, b1-b7, c1-c7, d1-d5

4. Teaching and Learning Methods

4a. Lectures
4b. Tutorial Exercises
4c. Workshops
4d. Projects

`

5. Student Assessment

5a. Tools

Final Exam	To measure knowledge, understanding, intellectual professional and general skills.
Projects	To measure professional and general skills

5b. Time Schedule

Assessment	Week No
Final Exam	30

5c. Grading System

Assessment	**Grade %**
Final Exam	70%
Year Work	30%

5d. Formative Assessment

Regular quizzes distributed along the whole semester.

6. List of References

6a. Course Notes

- Short course notes available at the course homepage.

6b. Required Books (Textbooks)

- .

6c. Recommended Books

- .

6d. Web Sites

- Course homepage is accessed from the FCI website: http://fci.aun.edu.eg/

7. Facilities Required for Teaching and Learning

- A lecture hall equipped with projectors and computers.
- Labs equipped with computers and Internet facilities.
- A library.

Course Coordinator:

Signature:

Date: 01/9/2021

Department Head: Prof. Dr. Khaled Fathy

Signature: 

Date: 01/9/2021

Course Matrix

Course Name Multimedia Security **Course Code** MM603

Course Aims	Course Content	Teaching Weeks	ILOs				Teaching and Learning Methods							Assessment Tools	Criteria
			a's	b's	c's	d's	Lectures	Tutorial Exercises	Practical Exercises	Workshops	Projects	Case Study	Data Collections	Final Exam	
• Provide students with an understanding of multimedia security principles and their importance in protecting digital content. • Explore encryption, watermarking, and authentication techniques for multimedia data. • Equip students with the skills to detect and prevent security breaches in multimedia systems. • Analyze threats, vulnerabilities, and attacks specific to multimedia content (e.g., piracy, forgery). • Familiarize students with industry standards and legal frameworks related to multimedia security.	Introduction to Multimedia Security and Importance of securing multimedia content, Threats and vulnerabilities	1-10	**1-7**	**1-6**	**1-5**	**1-5**	✓	✓						✓	
	Cryptography for Multimedia, Symmetric and asymmetric encryption techniques. Applications in multimedia systems.	11-18	**1-6**	**1-7**	**1-7**	**1-5**	✓	✓						✓	
	Digital Watermarking Invisible and visible watermarking, Robustness and imperceptibility.	19-26	**1-6, 8**	**1-7**	**1-7**	**1-5**	✓	✓				✓		✓	

Course Coordinator | Department Head | Prof. Dr. Khaled Fathy

Signature | Signature

Khaled Fathy Hussein

Course Report

This course was not studied for the academic year 2022-2021

`

Mobile Multimedia System

MM604

Relevant program	Master in Computers and Information (Multimedia)
Department offers the program	Multimedia
Department offers the course	Multimedia
Academic year	1st Year
Date of specification approval	01/9/2021

A. Basic Information

1. **Course Title:** Mobile Multimedia System

2. **Course Code:** MM604

3. **Course hours per week:**

Lecture	Tutorial / Practical	Total
2	–	2

B. Professional Information

1. Overall aims of the course

Upon completing this course the student will have learned, through appropriate classroom and laboratory experiences, the following.

- Provide students with a deep understanding of mobile multimedia systems and their architecture.
- Explore technologies and protocols used in mobile multimedia applications.
- Equip students with skills to design, develop, and optimize multimedia content for mobile platforms.
- Address challenges related to resource constraints, bandwidth limitations, and quality of service (QoS) in mobile multimedia systems.
- Introduce emerging trends in mobile multimedia, including 5G, cloud integration, and edge computing.

2. Intended Learning Outcomes (ILOs) of the course

a. Knowledge and Understanding

On successful completion of the program, graduates should be able to:

a1. Understand the architecture and components of mobile multimedia systems.
a2. Explain multimedia data transmission protocols used in mobile networks.
a3. Identify challenges in mobile multimedia streaming, including bandwidth and latency issues.
a4. Understand compression techniques for mobile multimedia content.

`

a5. Explore emerging technologies like 5G, cloud multimedia, and IoT integration.

b. Intellectual Skills

On successful completion of this program, graduates should be able to:

b1. Analyze performance challenges in mobile multimedia applications.
b2. Evaluate different multimedia delivery protocols (e.g., RTP, RTSP).
b3. Design strategies to optimize multimedia content for mobile devices.
b4. Develop solutions for QoS management in mobile multimedia systems.

c. Professional and Practical Skills

On successful completion of this program, graduates should be able to:

c1. Develop mobile multimedia applications for streaming, communication, and entertainment.
c2. Implement compression and encoding techniques for mobile platforms.
c3. Use tools and frameworks for mobile multimedia application development.
c4. Test and optimize multimedia content for different mobile environments.

d. General and Transferable Skills

On successful completion of this program, graduates should be able to:

d1. Communicate effectively in technical discussions and presentations.
d2. Collaborate in teams to develop mobile multimedia solutions.
d3. Adapt to emerging technologies in mobile multimedia systems.
d4. Demonstrate problem-solving skills in mobile application development.

3. Contents

No	Topic taught	No. of hours		ILOs
		Lecture	Tut/Prac	
1	Overview of mobile multimedia applications, Key components and architecture.	16	–	a1-a7, b1-b6, c1-c4, d1-d5
2	Mobile Multimedia Communication Protocols , Compression and Encoding Techniques.	24	–	a1-a7, b1-b7, c1-c5, d1-d5
3	Mobile Multimedia Networking and Mobile Multimedia Streaming.	16	–	a1-a6,a8, b1-b7, c1-c6, d1-d5

4. Teaching and Learning Methods

4a. Lectures
4b. Tutorial Exercises
4c. Workshops
4d. Projects

5. Student Assessment

5a. Tools

Final Exam	To measure knowledge, understanding, intellectual professional and general skills.
Projects	To measure professional and general skills

5b. Time Schedule

Assessment	Week No
Final Exam	30

5c. Grading System

`

Assessment	Grade %
Final Exam	70%
Year Work	30%

5d. Formative Assessment

Regular quizzes distributed along the whole semester.

6. List of References

6a. Course Notes

- Short course notes available at the course homepage.

6b. Required Books (Textbooks)

- .

6c. Recommended Books

- .

6d. Web Sites

- Course homepage is accessed from the FCI website: http://fci.aun.edu.eg/

7. Facilities Required for Teaching and Learning

- A lecture hall equipped with projectors and computers.
- Labs equipped with computers and Internet facilities.
- A library.

Course Coordinator:

Signature:

Date: 01/9/2021

Department Head: Prof. Dr. Khaled Fathy

Signature: 

Date: 01/9/2021

Course Matrix

Course Name	Mobile Multimedia Communication	**Course Code**	MM604

Course Aims	**Course Content**	**Teaching Weeks**	**ILOs**				**Teaching and Learning Methods**							**Assessment Tools**	**Criteria**
			a's	**b's**	**c's**	**d's**	**Lectures**	**Tutorial**	**Practical**	**Workshops**	**Projects**	**Case Study**	**Data**	**Final Exam**	
• Provide students with a deep understanding of mobile multimedia systems and their architecture. • Explore technologies and protocols used in mobile multimedia applications. • Equip students with skills to design, develop, and optimize multimedia content for mobile platforms. • Address challenges related to resource constraints, bandwidth limitations, and quality of service (QoS) in mobile multimedia systems. • Introduce emerging trends in mobile multimedia, including 5G, cloud integration, and edge computing.	Overview of mobile multimedia applications, Key components and architecture.	1-8	**1-7**	**1-6**	**1-4**	**1-5**	✓	✓						✓	
	Mobile Multimedia Communication Protocols , Compression and Encoding Techniques.	9-20	**1-7**	**1-7**	**1-5**	**1-5**	✓	✓				✓		✓	
	Mobile Multimedia Networking and Mobile Multimedia Streaming.	21-28	**1-6, 8**	**1-7**	**1-6**	**1-5**	✓	✓						✓	

Course Coordinator

Signature

Department Head

Prof. Dr. Khaled Fathy

Signature

Khaled Fathy Hussein

This course was not studied for the academic 2022-2021.

3D Visual Communication

MM605

Relevant program	Master in Computers and Information (Multimedia)
Department offers the program	Multimedia
Department offers the course	Multimedia
Academic year	1st Year
Date of specification approval	01/9/2021

A. Basic Information

1. **Course Title:** 3D Visual Communication
2. **Course Code:** MM605
3. **Course hours per week:**

Lecture	Tutorial / Practical	Total
2	–	2

B. Professional Information

1. Overall aims of the course

Upon completing this course the student will have learned, through appropriate classroom and laboratory experiences, the following.

- Introduce students to the fundamentals of 3D visual communication and its applications.
- Develop skills in 3D modeling, rendering, and animation techniques.
- Equip students with the ability to create realistic and interactive 3D visual content.
- Explore the use of 3D visualization tools and software (e.g., Blender, Maya, 3ds Max).
- Understand the impact of 3D visual communication in fields such as design, entertainment, education, and virtual environments.

2. Intended Learning Outcomes (ILOs) of the course

a. Knowledge and Understanding

On successful completion of the program, graduates should be able to:

a1. Understand key concepts and principles of 3D visual communication.
a2. Explain the techniques of 3D modeling, texturing, and rendering.
a3. Understand animation principles in 3D environments.
a4. Identify applications of 3D visuals in various industries (e.g., film, gaming, architecture).
a5. Explore emerging technologies such as VR (Virtual Reality) and AR (Augmented Reality) in 3D communication.

`

b. Intellectual Skills

On successful completion of this program, graduates should be able to:

b1. Analyze and evaluate different 3D design techniques.
b2. Solve challenges in 3D content creation and optimization.
b3. Design interactive 3D models for various applications.
b4. Develop strategies to improve visual storytelling through 3D communication.

c. Professional and Practical Skills

On successful completion of this program, graduates should be able to:

c1. Create 3D models, textures, and animations using professional tools.
c2. Use rendering engines to produce high-quality visuals.
c3. Implement interactive 3D environments for games, VR, and simulations.
c4. Optimize 3D assets for performance and quality across platforms.

d. General and Transferable Skills

On successful completion of this program, graduates should be able to:

d1. Communicate visual ideas effectively using 3D models and animations.
d2. Collaborate in teams on 3D visualization projects.
d3. Adapt to emerging technologies and tools in 3D communication.
d4. Solve complex design and visualization problems creatively.

3. Contents

No	Topic taught	No. of hours		ILOs
		Lecture	Tut/Prac	
1	Introduction to 3D Visual Communication: Importance and applications of 3D visuals, Basics of visual storytelling.	12	–	a1-a7, b1-b6, c1-c4,d1-d5
2	3D Modeling Techniques: Polygonal modeling ,NURBS and subdivision surfaces Texturing and Material Design: Applying textures and shaders, UV mapping techniques	20	–	a1-a7, b1-b7, c1-c5,d1-d5
3	Lighting and Rendering: Global illumination and real-time rendering ,Optimization techniques for rendering 3D Animation Principles: Keyframe animation, Rigging and character animation	24	–	a1-a6,a8, b1-b7, c1-c6,d1-d5

4. Teaching and Learning Methods

4a. Lectures
4b. Tutorial Exercises
4c. Workshops
4d. Projects

5. Student Assessment

5a. Tools

Final Exam	To measure knowledge, understanding, intellectual professional and general skills.
Projects	To measure professional and general skills

`

5b. Time Schedule

Assessment	Week No
Final Exam	30

5c. Grading System

Assessment	**Grade %**
Final Exam	70%
Year Work	30%

5d. Formative Assessment

Regular quizzes distributed along the whole semester.

6. List of References

6a. Course Notes

- Short course notes available at the course homepage.

6b. Required Books (Textbooks)

- .

6c. Recommended Books

- .

6d. Web Sites

- Course homepage is accessed from the FCI website: http://fci.aun.edu.eg/

7. Facilities Required for Teaching and Learning

- A lecture hall equipped with projectors and computers.
- Labs equipped with computers and Internet facilities.
- A library.

Course Coordinator:

Signature:

Date: 01/9/2021

Department Head: Prof. Dr. Khaled Fathy

Signature: 

Date: 01/9/2021

Course Matrix

Course Name	3D Visual Communication	**Course Code**	MM605

Course Aims	**Course Content**	**Teaching Weeks**	**ILOs**				**Teaching and Learning Methods**							**Assessment Tools**	**Criteria**
			a's	**b's**	**c's**	**d's**	**Lectures**	**Tutorial**	**Practical**	**Workshops**	**Projects**	**Case Study**	**Data Collections**	**Final Exam**	
• Introduce students to the fundamentals of 3D visual communication and its applications. • Develop skills in 3D modeling, rendering, and animation techniques. • Equip students with the ability to create realistic and interactive 3D visual content. • Explore the use of 3D visualization tools and software (e.g., Blender, Maya, 3ds Max). • Understand the impact of 3D visual communication in fields such as design, entertainment, education, and virtual environments.	Introduction to 3D Visual Communication: Importance and applications of 3D visuals, Basics of visual storytelling.	1-6	**1-7**	**1-6**	**1-4**	**1-5**	✓	✓						✓	
	3D Modeling Techniques: Polygonal modeling ,NURBS and subdivision surfaces Texturing and Material Design: Applying textures and shaders, UV mapping techniques	7-16	**1-7**	**1-7**	**1-5**	**1-5**	✓	✓						✓	
	Lighting and Rendering: Global illumination and real-time rendering ,Optimization techniques for rendering 3D Animation Principles: Keyframe animation, Rigging and character animation	17-28	**1-6, 8**	**1-7**	**1-6**	**1-5**	✓	✓						✓	

Course Coordinator		Department Head	Prof. Dr. Khaled Fathy
Signature		Signature	

Course Report

This course was not studied for the academic 2022-2021.

Thesis Specifications

`

Thesis Specifications

Relevant program	Master in Computers and Information (Multimedia)
Department offers the program	Multimedia
Department offers the course	Multimedia
Academic year	2nd Year
Date of specification approval	01/9/2021

A. Basic Information

1. **Title:** Master Thesis

B. Professional Information

1. Overall aims of the thesis

Upon completing this thesis, the student will have learned, through appropriate discussion and laboratory experiences, the following.

- Doing the research.
- Contributing something original to the field.
- Ethical issues for the research by the University Ethics Committee.
- The topic matches the student' interests and capabilities.

2. Intended Learning Outcomes (ILOs) of the course

a. Knowledge and Understanding

On successful completion of the program, graduates should be able to:

a1. Understand key concepts and theories related to multimedia systems, technologies, and applications.

a2. Explain the principles of multimedia design and how different forms of media (text, audio, video, graphics, etc.) can be integrated in multimedia systems.

a3. Describe the latest advancements in multimedia technologies such as virtual reality, deep learning for multimedia, and interactive systems.

`

a4. Understand the ethical, legal, and social issues in multimedia production, distribution, and consumption.

b. Intellectual Skills

On successful completion of this program, graduates should be able to:

b1. Critically analyze multimedia problems and propose solutions using appropriate tools and techniques.
b2. Evaluate multimedia systems and applications based on performance, usability, and user experience.
b3. Synthesize research findings to create new multimedia solutions or to improve existing systems.
b4. Identify and address technical challenges in multimedia design and implementation through critical thinking.

c. Professional and Practical Skills

On successful completion of this program, graduates should be able to:

c1. Design, develop, and implement multimedia applications using current industry-standard tools and technologies.
c2. Apply multimedia production techniques such as video editing, 3D modeling, animation, and sound design.
c3. Collaborate effectively within a team to create multimedia projects, managing tasks and resources efficiently.
c4. Use multimedia technologies in real-world contexts such as online platforms, interactive media, or digital marketing campaigns.

d. General and Transferable Skills

On successful completion of this program, graduates should be able to:

d1. Communicate technical ideas clearly to both technical and non-technical audiences, including in oral presentations and written reports.
d2. Demonstrate time management and organizational skills when working on multimedia projects.
d3. Work effectively in diverse teams, contributing to collaborative projects in interdisciplinary settings.
d4. Apply critical thinking and problem-solving techniques to overcome challenges encountered during multimedia projects.

3. Teaching and Learning Methods

4a. Discussion
4b. Workshops
4c. Projects
4d. Case Study
4e. Data Collections

4. Student Assessment

5a. Tools

Oral examination	Knowledge and Understanding - Intellectual Skills - General Skills
Thesis	Knowledge and Understanding - Intellectual Skills - Professional Skills - General Skills

`

5. Facilities Required for Teaching and Learning

- Labs equipped with computers and Internet facilities.
- Advanced research labs.
- Discussion rooms.
- Digital library contains links to international journals.
- A library.

Department Head: Prof. Dr. Khaled Fathy

Signature: 

Date: 01/9/2021