

Course Syllabus

1	Course title	Multimedia Engineering
2	Course number	0907724
3	Credit hours (theory, practical)	3,0
	Contact hours (theory, practical)	3,0
4	Prerequisites/corequisites	None
5	Program title	Computer and Networks Engineering
6	Program code	0907
7	Awarding institution	The University of Jordan
8	School	Engineering
9	Department	Computer Engineering
10	Level of course	Semester 2 (Second level)
11	Year of study and semester (s)	Second Year, Second Semester
12	Final Qualification	Passing the exams and the research project
13	Other department (s) involved in teaching the course	None
14	Language of Instruction	English
15	Date of production/revision	December 2018

16. Course Coordinator:

Instructor: Prof. Khalid A. Darabkh
Office#: CPE 342,
Office hours: Daily 12-1 pm,
E-mail address: k.darabkeh@ju.edu.jo

17. Other instructors:

None

18. Course Description:

Signal processing concepts exploited in the field of multimedia applications, issues in multimedia applications design, multimedia data processing and representations, multimedia compression standards (text, image, video and audio), multimedia content representation, content-based multimedia retrieval, watermarking techniques and security, multimedia network communications.

19. Course aims and outcomes:

<p>A- Aims:</p> <ul style="list-style-type: none"> • Discussing the technical details of common multimedia data formats, protocols, and compression techniques of digital images, video and audio content. • Describing and understanding the technical details of JPEG and MPEG families of standards. • Discussing the significance of “Quality of Service” in multimedia networking. • Describing the principles and technical details of several wired and wireless networking protocols. • Developing simple but demonstrative multimedia applications using JAI and JMF.
<p>B- Intended Learning Outcomes (ILOs): Upon successful completion of this course students will be able to</p> <ol style="list-style-type: none"> I. Research current solutions for a problem in multimedia systems and report and present the results of this research. [4, 5, 8] II. Have a thorough understanding of the major aspects of technical details of multimedia data representation, and multimedia content delivery platforms. [1, 2] III. Learn how to use JPEG and MPEG families of standards. [1, 7] IV. Develop simple but demonstrative multimedia applications using JAI and JMF. [2, 3] V. Learn how to use technical details of several wired and wireless networking protocols. [1, 3]

20. Topic Outline and Schedule:

Topic	Week	Instructor	Achieved ILOs	Evaluation Methods	Reference
Introduction to Multimedia Studies	1	Khalid A. Darabkh	II	Exams and Reports	[1,2]
Data Representation	2	Khalid A. Darabkh	II	Exams and Reports	[1,2]
Basic Compression Techniques	4	Khalid A. Darabkh	II	Exams and Reports	[1,2]
Video and Audio Data Compression Techniques	6	Khalid A. Darabkh	III, IV	Exams and Reports	[1, 2, 3, 7]
Multimedia Wireless Networks, Heterogeneous Networks, and advanced QoS Support	10	Khalid A. Darabkh	V	Exams and Reports	[1, 3]

21. Teaching Methods and Assignments:

Development of ILOs is promoted through the following teaching and learning methods:

- The student attends the class presentations and participates in the discussions.
- The student studies references and research papers.
- The student carries out a research project in multimedia systems that surveys original and recent research papers where the student studies basic ideas, state-of-the-art solutions, and expected future directions.
- The student develops a professional report for the research report.
- The student presents the research project in class.

22. Evaluation Methods and Course Requirements:

Opportunities to demonstrate achievement of the ILOs are provided through the following assessment methods and requirements:

- Exams
- Report for the Research Project
- Presentation for the Research Project

23. Course Policies:

A. Attendance policies:

- Attendance is mandatory and highly encouraged. To that end, attendance will be taken every lecture. All exams (including the final exam) should be considered cumulative.

B- Absences from exams and handing in assignments on time:

- A makeup exam can be arranged for students with acceptable absence causes.
- The project report must be handed in in time.

C- Health and safety procedures:

- All health and safety procedure of the university and school should be followed.

D- Honesty policy regarding cheating, plagiarism, misbehavior:

- The research project and exams are expected to be individual work (have to be done by your own) and completed without any help of your classmates. Handing in work that was jointly prepared and/or copied will be considered plagiarism and will be handled according to the University regulations.

E- Grading policy:

- Research Project (30%)
- Mid-term Exam (30%)
- Final Exam (40%)

F- Available university services that support achievement in the course:

- Course Website: <http://academic.ju.edu.jo/k.darabkeh/Material>

24. Required equipment: (Facilities, Tools, Labs, Training)

None

25. References:

Required book (s), assigned reading and audio-visuals:

- Z-N. Li, M.S. Drew, and J. Liu, Fundamentals of Multimedia, 2nd Ed., Springer, Switzerland, 2014.

Recommended books, materials, and media:

- Parag Havaldar, Gerard Medioni, Multimedia Systems: Algorithms, Standards, and Industry Practices, Cengage Learning, 2010.
- R. Steinmetz and K. Nahrstedt, Multimedia Fundamentals: Media Coding and Content Processing, Prentice Hall, 2002.
- K. R. Rao, Z. S. Bojkovic and D. A. Milanovic, Multimedia Communication Systems: Techniques, Standards and Networks, Prentice Hall, 2002.
- R. Steinmetz and K. Nahrstedt, Multimedia: Computing, Communications and Applications, Prentice Hall, 1995.

26. Additional information:

Students are assumed to have sufficient knowledge pertaining to network systems design and wireless networks.

Name of Course Coordinator: **Prof. Khalid A. Darabkh** Signature: ----- Date: -----

Head of curriculum committee/Department: ----- Signature: -----

Head of Department: ----- Signature: -----

Head of curriculum committee/Faculty: ----- Signature: -----

Dean: ----- -Signature: -----