



DISCIPLINE ACADEMIC SHEET ACADEMIC YEAR 2025 – 2026

1. PROGRAMME DATA

1.1. Higher Education Institution	UNIVERSITY OF CRAIOVA
1.2. Faculty	Automation, Computers and Electronics
1.3. Department	Computers and Information Technology
1.4. Field of Study	Computers and Information Technology
1.5. Study level	L(License / Undergraduate)
1.6. Organizational form	IF
1.7. Study Program (name/code) /Qualification	Computers / L2060101010

2. Discipline data

2.1 Discipline Name	Multimedia Systems						
2.2 Course Activities Holder	Cosmin STOICA SPAHIU <i>Ph.D. Eng</i>						
2.3. Practical Activities Holder	Cosmin STOICA SPAHIU <i>Ph.D. Eng</i>						
2.4. Study Year	4	2.5. Semester	2	2.6. Evaluation type	V	2.7. Discipline regime	DOP

3. Estimated total time (hours per semester of teaching activities)

3.1. Number of hours per week	4	in which: 3.2 course	2	3.3. lab..	2
3.4. Total hours of curriculum	40	in which: 3.5 course	20	3.6. lab.	20
Time distribution - hours/week					
Study after manual, course support, bibliography and notes					25
Additional documentation in library, on specialized electronic platforms and field					10
Training seminars / labs, homework, portfolios and essays					10
Tutorial					10
Examinations					5
Other activities.....					
3.7. Total hours per individual activities					60
3.8. Total hours per semester					100
3.9. Number of credits					4

4. Preconditions (where appropriate)

4.1. of curriculum	There is needed knowledge related to the following disciplines from previous years: Databases, Data Structures, Web applications design
4.2. of competence	Programming Techniques

5. Conditions (where appropriate)

5.1. of the course	Presentations are held in the University course rooms, which are provided with the necessary equipment (video, audio if necessary)
5.2. of seminar/ laboratory/project	Multimedia authoring tools for presentation, designing and implementation of multimedia applications using all multimedia data

	types (sound, image, video, animation), Internet connected computer for online courses
--	--

6. COURSE OBJECTIVES – expected learning outcomes that are supported by completing and passing the course

Knowledge	Student/Graduate: 1. The student/graduate describes, identifies, summarizes elementary concepts and methods regarding programming languages, programming environments, programming techniques, databases. Artificial Intelligence and Software Engineering and how they are applied to concrete problems
Skills (Abilities)	Student/Graduate: 1. The student/graduate specifies requirements, analyzes, elaborates, develops and tests software systems in general-purpose programming languages (C, etc.) and/or object-oriented (C++, Java, etc.), applying the specific elements of software engineering. 2. The student/graduate designs, implements, develops and/or manages applications that include various types of databases. 3. The student understands the main concepts underlying translation systems and source code compilation. Contribute to the development and improvement of tools specific to programming languages.
Responsibility and autonomy	Student/Graduate: 1. Demonstrate ethical and responsible behavior in the creation, use, and dissemination of multimedia content. 2. Communicate effectively about multimedia projects, both verbally and in writing, in Romanian and in an international language. 3. Show initiative in learning and applying new multimedia tools and technologies beyond the classroom. 4. Collaborate constructively in team-based multimedia projects, taking on various roles and contributing to shared goals.

7. Content

7.1. Course	The method of implementation	Teaching methods	Allocated time (hours)
1.Introduction 1.1 The history of multimedia systems 1.2 Multimedia/Hypermedia 1.3 Multimedia systems	face to face	Interactive presentations, using computers and specialized software (PowerPoint)	2
2. Multimedia Authoring 2.1 Multimedia authoring systems and applications 2.2 Multimedia programming	face to face	Interactive presentations, using computers and specialized software (PowerPoint)	2
3.Multimedia technologies	face to face	Interactive presentations, using computers and specialized software (PowerPoint)	2
4. Compression methods 4.1 Huffman (description, example, exercises) 4.2 Arithmetic compression 4.3 RLE , LZW , JPEG	face to face	Interactive presentations, using computers and specialized software (PowerPoint)	2
5. Images 5.1 Basics 5.2 Color spaces – definitions, properties 5.3 Image formats	face to face	Interactive presentations, using computers and specialized software (PowerPoint)	2

6. Sound 6.1 Sound digitization 6.2 Nyquist's theorem 6.3 Audio formats	face to face	Interactive presentations, using computers and specialized software (PowerPoint)	2
7. Video 7.1 Video signals 7.2 Analog Video 7.3 Digital Video 7.4 Sampling	face to face	Interactive presentations, using computers and specialized software (PowerPoint)	2
8. Content-based visual query 8.1 Necessity, defining problems 8.2 Color histogram, color binary set 8.3 Algorithms for computing image similitude 8.4 Precision and recall parameters	face to face	Interactive presentations, using computers and specialized software (PowerPoint)	2
9. Applications on multimedia databases 9.1 Specifics of multimedia databases 9.2 Oracle Intermedia - data types, methods for multimedia databases	face to face	Interactive presentations, using computers and specialized software (PowerPoint)	2
10. Multimedia applications of e-learning type 10.1 Characteristics of e-learning application 10.2 Original e-learning platform presentation	face to face	Interactive presentations, using computers and specialized software (PowerPoint)	2
Bibliography: 1. Multimedia Systems Concepts Standards and Practice, Ramesh Yerraballi, http://data.uta.edu/~ramesh/book/MultimediaSystems/index.html 2. Multimedia databases-study on some methods of retrieving visual information, Liana Stanescu, Ed. Universitaria 2004 3. Networked Multimedia Systems, S.V. Raghavan, Satish K. Tripathi, Pearson Education Ltd., 1997 4. Multimedia Systems and Content-Based Retrieval, Sagarmay Deb, Idea Group Publishing, 2004 5. Multimedia Applications, Ralf Steinmetz, Klara Nahrstedt, Springer, 2004 6. Fundamentals of Multimedia: Ze-Nian Li & Mark S. Drew, Pearson Prentice Hall, 2004			

7.2. Seminar/laboratory/project	The method of implementation	Teaching methods	Allocated time (hours)
1. Introduction in Multimedia (Integrating sound in the web pages)	face to face	Practical application	3
2. Integrating images in the web applications	face to face	Practical application	2
3. Integrating video in the web applications	face to face	Practical application	2
4. Designing interactive web applications	face to face	Practical application	2
5. Develop basic algorithms for color spaces translations	face to face	Practical application	3
6. Develop basic algorithms for images processing (e.g. histograms extraction)	face to face	Practical application	4
7. Develop basic algorithms for content based retrieval	face to face	Practical application	4
Bibliography: 1. Multimedia Systems Concepts Standards and Practice, Ramesh Yerraballi, http://data.uta.edu/~ramesh/book/MultimediaSystems/index.html 2. Networked Multimedia Systems, S.V. Raghavan, Satish K. Tripathi, Pearson Education Ltd., 1997 3. Multimedia Systems and Content-Based Retrieval, Sagarmay Deb, Idea Group Publishing, 2004 4. Fundamentals of Multimedia: Ze-Nian Li & Mark S. Drew, Pearson Prentice Hall, 2004			

8. Correlating the content of the discipline with the expectations of representatives from the epistemic community, professional associations and representative employers in the field related to the program

- Adhere to recognized standards in multimedia system design and software engineering.
- Emphasize ethical practices in digital content creation and intellectual property.
- Foster competencies in interoperability, accessibility, and user-centered design

9. Evaluation

Activity Type	9.1. Evaluation criteria	9.2. Evaluation methods	9.3. Final mark weight
9.4. Course		Written exam	50%
9.5.Laboratory		Practical application	50%
9.6. Minimum standard of performance			
• Understand and explain the basic concepts of multimedia technologies, including types of multimedia data (image, sound, video), compression techniques, and multimedia data querying methods. • Demonstrate the ability to use at least one authoring tool to create a functional multimedia application that integrates multiple media types. • Apply basic compression and retrieval methods to optimize multimedia content for storage and access.			

Date of Completion	Signature of the Course Activities Holder,	Signature of the Practical Activities Holder,
01.09.2025	S.L.dr. Cosmin Stoica Spahiu	

Date of Approval in the Department	Signature of the Department Director,
	Ș.l.dr.ing. Nicolae ENESCU

Date of Approval in the Faculty	Signature of the Dean,
	Prof.dr.ing. Dorin ȘENDRESCU