CO 2	✓	✓		✓
CO 3	✓		✓	✓
CO 4		✓		✓

6. MULTIMEDIA SYSTEMS

Discipline	COMPUTER SCIENCE				
Course Code	UK2DSCCSC105				
Course Title	MULTIMEDIA SYSTEMS				
Type of Course	**DSC**				
Semester	II				
Academic Level	1				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	3 hours	-	2 hours	5 hours
Pre-requisites	Nil.				
Course Summary	The aim of this course is to introduce students to the diverse world of multimedia, covering foundational concepts, practical skills, and ethical considerations. Students will explore the definition and characteristics of multimedia, gaining an understanding of its widespread applications across various domains. By the end of the course, students will have a comprehensive understanding of multimedia principles, practical skills in multimedia content creation and editing, and awareness of the ethical considerations in multimedia technologies. They will be equipped with the knowledge and skills to pursue further studies or careers in multimedia-related fields.				

Detailed Syllabus:

Module	Unit	Content	Hrs (L+P)
I	**Introduction to Multimedia**		**15**

	1	Introduction to Multimedia: Definition and characteristics of Multimedia.	
	2	Multimedia application -Definition - Classification -Multimedia Hardware - Multimedia software - Image editing softwares, Video editing softwares, Audio editing softwares, Slideshow creation-Prezi, Screen recording tools-Camtasia, OBS Studio (basic concepts of all tools only)	
	3	Overview of Multimedia elements: text, images, audio, video, animations, and interactive elements.	
	4	Multimedia Text: Text in Multimedia -Multimedia graphics: coloring - digital imaging fundamentals - development and editing - file formats - scanning and digital photography.	
II	**Multimedia Representation and Formats**		**15**
	5	Understanding Multimedia data representation and storage formats.	
	6	Common Multimedia file formats (e.g., JPEG, MP3, MPEG, GIF) and their properties.	
	7	Compression techniques for reducing Multimedia file sizes while preserving quality.	
	8	Multimedia Audio: Digital medium - Digital audio technology - sound cards - recording - editing - MP3 - MIDI fundamentals - Working with MIDI - audio file formats - adding sound to Multimedia project.	
III	**Multimedia Content Creation**		**15**
	9	Multimedia Project: Stages of a project - Multimedia skills - design concept - authoring - planning and costing –Multimedia Team.	
	10	Introduction to Multimedia authoring software tools and platforms. What is Multimedia authoring Software, Necessity of Multimedia Authoring software, Types of Multimedia Authoring tools- just basics and examples, (e.g., Adobe Creative Suite, Blender, Unity).	
	11	Creating Multimedia projects using authoring tools, incorporating text, images, audio, and video.	

	12	Multimedia Content Creation: Techniques for creating and editing multimedia content. Multimedia Animation: Computer animation fundamentals - Kinematics - morphing - animation s/w tools and techniques	
	13	Image editing and manipulation basics and examples (e.g., Photoshop, GIMP), Image Editing software: selection tools, working with layers, masks and channels, correcting and enhancing photographs	
	14	Audio recording, editing, and mixing (e.g., Audacity, Adobe Audition).	
	15	Multimedia Video: How video works - broadcast video standards - digital video fundamentals – digital video production and editing techniques - file formats Video editing and post-production (e.g., Adobe Premiere Pro, Final Cut Pro).	
IV	**Multimedia Programming and Applications**		**15**
	16	Basics of multimedia programming languages and frameworks (e.g., HTML5, JavaScript, Python with libraries like OpenCV and Pygame) (basics only).	
	17	Integration of multimedia elements into web pages, mobile apps, and interactive environments.	
	18	Multimedia Applications and Platforms: Analysis of multimedia applications across various domains (e.g., entertainment, education, advertising, healthcare).	
	19	Legal and Ethical Issues: Copyright and intellectual property considerations in multimedia content creation and distribution. Ethical implications of multimedia technologies (e.g., privacy concerns, representation and bias in media).	
V	**Flexi Module - Not included for End Semester Exams**		**15**
	20	Scripting multimedia interactions and animations, Interactive animations.	
	21	Virtual reality (VR) and augmented reality (AR) systems, 3D multimedia content creation and rendering	

	22	Multimedia-looking towards Future: Digital Communication and New Media, Interactive Television, Digital Broadcasting, Digital Radio, Multimedia Conferencing	
	23	Immersive multimedia experiences and interactive storytelling, Wearable multimedia devices and applications	
	24	Multimedia Analytics- Multimedia content analysis and understanding	

References

1. S.Gokul, "Multimedia Magic", BPB Publications, 2nd Edition.
2. Tay Vaughen, "Multimedia Making it Work", TMH, 9th Edition.
3. Ralf Steinmetz and Klara Nahrstedt, Introduction to Multimedia Systems
4. Ze-Nian Li, Mark S. Drew, and Jiangchuan Liu, Fundamentals of Multimedia

Lab Exercises

1. Hands-on experience with any text, audio, video, authoring tools.
2. Create a multimedia project using Multimedia tools and techniques learnt.
3. Case studies of successful Multimedia projects and platforms.
4. Report Writing on Emerging trends and future directions in multimedia technology (e.g., virtual reality, augmented reality, immersive experiences etc.).

Course Outcomes

No.	Upon completion of the course the graduate will be able to	Cognitive Level	PSO addressed
CO-1	Infer basic multimedia concepts	U	PSO-1
CO-2	Interpret the various multimedia representations	U	PSO-1
C0 -3	Develop basic multimedia content	Ap	PSO-1, 2, 3
CO -4	Summarise programming aspects applicable for multimedia	U	PSO-1, 2

R-Remember, U-Understand, Ap-Apply, An-Analyse, E-Evaluate, C-Create

Note: 1 or 2 COs/module

Name of the Course: MULTIMEDIA SYSTEMS

Credits: 3:0:1 (Lecture: Tutorial: Practical)

CO No.	CO	PO/PSO	Cognitive Level	Knowledge Category	Lecture (L)/ Tutorial (T)	Practical (P)
1	Infer basic multimedia concepts	PO-3, 6, 7 PSO-1	U	F, C	L	-
2	Interpret the various multimedia representations	PO-3, 6, 7 PSO-1	U	F, C	L	-
3	Develop basic multimedia content	PO-3, 6, 7 PSO-1, 2, 3	Ap	F, C, P	L	P
4	Summarize programming aspects applicable for multimedia	PO-1, 2, 3, 6, 7 PSO-1, 2	U	F, C	L	-

F-Factual, C- Conceptual, P-Procedural, M-Metacognitive

Mapping of COs with PSOs and POs:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO 1	PSO 2	PSO 3	PSO 4
CO 1	-		1	-	-	2	2	-	2	-	-	-
CO 2	-	--	1	-	-	2	2	-	2	-	-	-
CO 3	-	-	2	-	-	2	2	1	2	1	2	-
CO 4	1	2	1	-	-	2	2	-	2	2	-	-

Correlation Levels:

Level	Correlation
-	Nil
1	Slightly / Low
2	Moderate / Medium
3	Substantial / High

Assessment Rubrics:

- Quiz / Assignment/ Discussion / Seminar
- Trivial content creation assignments
- Midterm Exam
- Final Exam

Mapping of COs to Assessment Rubrics:

	Internal Exam	**Assignment**	**Lab Assessment**	**End Semester Examinations**
CO 1	✓	✓		✓
CO 2	✓	✓		✓
CO 3	✓	✓	✓	✓
CO 4	✓	✓		✓

7. PYTHON FOR DATA ANALYTICS

Discipline	COMPUTER SCIENCE
Course Code	UK2DSCCSC106
Course Title	PYTHON FOR DATA ANALYTICS