| 22CD903 | MULTIMEDIA AND ANIMATION | 3/0/0/3 |
|---|---|---|
| **Nature of Course:** | D (Theory Application) | |
| **Prerequisites:** | - | |

**Course Objectives:**

| | |
|---|---|
| 1. | To grasp the fundamental knowledge of Multimedia elements and systems |
| 2. | To get familiar with Multimedia file formats and standards |
| 3. | To learn the process of Authoring multimedia presentations |
| 4. | To learn the techniques of animation in 2D and 3D |
| 5. | To explore different popular applications of multimedia |

**Course Outcomes:**
**Upon completion of the course, students shall have ability to:**

| | | |
|---|---|---|
| C903.1 | Understand the context of Multimedia and its standards | [U] |
| C903.2 | Examine the different types of media elements of different formats on content pages | [AP] |
| C903.3 | Illustrate 2D and 3D creative and interactive presentations for different target multimedia applications. | [AP] |
| C903.4 | Analyze the complexity of multimedia applications in the context of cloud, security and social networking | [A] |
| C903.5 | Apply different standard animation techniques for real time applications | [AP] |

**Course Contents:**

**Module I MULTIMEDIA FILE FORMATS AND STANDARDS** **15 Hours**

Definitions – Elements - Multimedia Hardware and Software - Distributed multimedia systems – Challenges - Multimedia metadata - Multimedia databases – Hypermedia - Multimedia Learning - File formats – Text and Image file formats - Graphic and animation file formats - Digital audio and Video file formats - Color in image and video - Color Models - Multimedia data and file formats for the web.

**Module II MULTIMEDIA AUTHORING AND APPLICATIONS** **15 Hours**

Authoring metaphors - Card and Page Based Tools - Icon and Object Based Tools - Time Based Tools - Cross Platform Authoring Tools - 3D Modeling and Animation Tools – Image, Audio Editing, Movie Tools - Creating interactive presentations - Multimedia Big data computing, social networks, surveillance - Multimedia Cloud Computing - Multimedia ontology.

**Module III ANIMATION** **15 Hours**

Principles of animation - staging, squash and stretch - Timing, onion skinning, secondary action - 2D, 2 ½ D and 3D animation - Animation techniques: Keyframe, Morphing, Inverse Kinematics, Hand Drawn, Character rigging, Vector animation, Stop motion, Motion graphics - Fluid Simulation - Skeletal animation - Skinning Virtual Reality and Augmented Reality.

**Total Hours: 45**

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|---|---|
| **Text Books:** | |
| 1. | Ze-Nian Li, Mark S. Drew, Jiangchuan Liu, “Fundamentals of Multimedia”, 3rd Edition, Springer, 2021. |
| 2. | John M Blain, “The Complete Guide to Blender Graphics: Computer Modeling & Animation”, CRC press, 3rd Edition, 2016. |
| 3. | Gerald Friedland, Ramesh Jain, “Multimedia Computing”, Cambridge University Press, 2018. |
| **Reference Books:** | |
| 1. | Prabhat K.Andleigh, Kiran Thakrar, “Multimedia System Design”, Pearson Education, 1st Edition, 2015 |
| 2. | Mark Gaimbruno, “3D Graphics and Animation”, 2nd Edition, New Riders, 2002. |
| 3. | Mohsen Amini Salehi, Xiangbo Li, “Multimedia Cloud Computing Systems”, Springer Nature, 1st Edition, 2021. |
| 4. | Rick parent, “Computer Animation: Algorithms and Techniques”, Morgan Kauffman, 3rd Edition, 2012. |
| **Web References:** | |
| 1. | https://www.ucl.ac.uk/slade/know/3396 |
| 2. | https://developer.android.com/training/animation/overview |
| 3. | https://opensource.com/article/18/2/open-source-audio-visual-production-tools |
| 4. | https://camstudio.org// |
| **Online Resources:** | |
| 1. | https://www.coursera.org/learn/digitalmedia |
| 2. | https://nptel.ac.in/courses/117105083 |
| 3. | https://onlinecourses.swayam2.ac.in/ntr20_ed15/preview |

| **Continuous Assessment** | | | | **End Semester Examination** | **Total** |
|---|---|---|---|---|---|
| **Formative Assessment** | **Summative Assessment** | **Total** | **Total Continuous Assessment** | | |
| **80** | **120** | **200** | **40** | **60** | **100** |

| **Assessment Methods & Levels (based on Blooms’ Taxonomy)** | | | |
|---|---|---|---|
| **Formative Assessment based on Capstone Model** | | | |
| **Course Outcome** | **Bloom’s Level** | **Assessment Component** | **FA (16%) [80 Marks]** |
| C903.1, C903.2 | Understand | Quiz | 20 |
| C903.3 | Apply | Assignment | 20 |
| C903.4 | Analyze | Case study | 20 |
| C903.5 | Apply | Assignment | 20 |

| **Assessment based on Summative and End Semester Examination** | | | |
|---|---|---|---|
| **Bloom’s Level** | **Summative Assessment (24%) [120 Marks]** | | **End Semester Examination (60%) [100 Marks]** |
| | **CIA1 : [60 Marks]** | **CIA2 : [60 Marks]** | |
| Remember | 20 | 20 | 20 |
| Understand | 40 | 20 | 30 |
| Apply | 40 | 40 | 40 |
| Analyse | - | 20 | 10 |

| | | | |
|---|---|---|---|
| Evaluate | - | - | - |
| Create | - | - | - |

| **Assessment based on Continuous and End Semester Examination** | | | | | | |
|---|---|---|---|---|---|---|
| **Continuous Assessment (40%) [200 Marks]** | | | | | | **End Semester Examination (60%) [100 Marks]** |
| **CA 1 : 100 Marks** | | | **CA 2 : 100 Marks** | | | |
| **SA 1 (60 Marks)** | **FA 1 (40 Marks)** | | **SA 2 (60 Marks)** | **FA 2 (40 Marks)** | | |
| | **Component - I (20 Marks)** | **Component - II (20 Marks)** | | **Component - I (20 Marks)** | **Component – II (20 Marks)** | |

| **Course Outcome (CO)** | **Programme Outcomes (PO)** | | | | | | | | | | | | **Programme Specific Outcomes (PSO)** | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **1** | **2** | **3** |
| C903.1 | 3 | 2 | 2 | 2 | | | | | | | | 2 | 2 | 2 | 2 |
| C903.2 | 3 | 2 | 2 | 2 | | | | | | | | 2 | 2 | 2 | 2 |
| C903.3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | | | | 2 | 2 | 2 | 2 |
| C903.4 | 3 | 2 | 2 | 2 | | 2 | 2 | 2 | | | | 2 | 2 | 2 | 2 |
| C903.5 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | | | | 2 | 2 | 2 | 2 |