

**APPLIED MULTIMEDIA TECHNIQUES****Course Code : 313003**

**Programme Name/s** : Information Technology/ Computer Science & Information Technology  
**Programme Code** : IF/ IH  
**Semester** : Third  
**Course Title** : APPLIED MULTIMEDIA TECHNIQUES  
**Course Code** : 313003

**I. RATIONALE**

Multimedia and Animation Techniques make connections between verbal and visual representations of contents. This practical oriented course help students to produce different components of Multimedia including text, images, audio, video and animation in order to use them in applications.

**II. INDUSTRY / EMPLOYER EXPECTED OUTCOME**

Construct different types of Multimedia.

**III. COURSE LEVEL LEARNING OUTCOMES (COS)**

Students will be able to achieve & demonstrate the following COs on completion of course based learning

- CO1 - Manipulate color models of image.
- CO2 - Perform edit operation on text and images using graphics processing tools.
- CO3 - Perform basic audio editing operations.
- CO4 - Perform basic video editing operations.
- CO5 - Create simple 2D Animation.
- CO6 - Design Web Pages with Multimedia components.

**IV. TEACHING-LEARNING & ASSESSMENT SCHEME**

| Course Code | Course Title                  | Abbr | Course Category/s | Learning Scheme          |     |     |     | Credits | Paper Duration | Assessment Scheme |        |       |       |                  |     |     |   |             |    | Total Marks |    |
|-------------|-------------------------------|------|-------------------|--------------------------|-----|-----|-----|---------|----------------|-------------------|--------|-------|-------|------------------|-----|-----|---|-------------|----|-------------|----|
|             |                               |      |                   | Actual Contact Hrs./Week |     |     | SLH |         |                | NLH               | Theory |       |       | Based on LL & TL |     |     |   | Based on SL |    |             |    |
|             |                               |      |                   | CL                       | TL  | LL  |     |         |                |                   | FA-TH  | SA-TH | Total | Practical        |     | SLA |   |             |    |             |    |
|             |                               |      |                   | Max                      | Max | Max | Min |         |                | Max               | Min    | Max   | Min   | Max              | Min |     |   |             |    |             |    |
| 313003      | APPLIED MULTIMEDIA TECHNIQUES | AMT  | SEC               | 1                        | -   | 2   | 1   | 4       | 2              | -                 | -      | -     | -     | -                | 25  | 10  | - | -           | 25 | 10          | 50 |

**APPLIED MULTIMEDIA TECHNIQUES****Course Code : 313003****Total IKS Hrs for Sem. : 0 Hrs**

Abbreviations: CL- ClassRoom Learning , TL- Tutorial Learning, LL-Laboratory Learning, SLH-Self Learning Hours, NLH-Notional Learning Hours, FA - Formative Assessment, SA -Summative assessment, IKS - Indian Knowledge System, SLA - Self Learning Assessment

Legends: @ Internal Assessment, # External Assessment, \*# On Line Examination , @\$ Internal Online Examination

Note :

1. FA-TH represents average of two class tests of 30 marks each conducted during the semester.
2. If candidate is not securing minimum passing marks in FA-PR of any course then the candidate shall be declared as "Detained" in that semester.
3. If candidate is not securing minimum passing marks in SLA of any course then the candidate shall be declared as fail and will have to repeat and resubmit SLA work.
4. Notional Learning hours for the semester are (CL+LL+TL+SL)hrs.\* 15 Weeks
5. 1 credit is equivalent to 30 Notional hrs.
6. \* Self learning hours shall not be reflected in the Time Table.
7. \* Self learning includes micro project / assignment / other activities.

**V. THEORY LEARNING OUTCOMES AND ALIGNED COURSE CONTENT**

| Sr.No | Theory Learning Outcomes (TLO's)aligned to CO's.   | Learning content mapped with Theory Learning Outcomes (TLO's) and CO's.  | Suggested Learning Pedagogies.   |
|-------|--|--|--|
| 1     | <p>TLO 1.1 Define Multimedia and its applications.</p> <p>TLO 1.2 Describe types of display.</p> <p>TLO 1.3 Describe component of Multimedia.</p> <p>TLO 1.4 Describe various color models.</p>  | <p><b>Unit - I Introduction to Multimedia</b></p> <p>1.1 Definition of Multimedia, application of Multimedia: business, education.</p> <p>1.2 Multimedia System Framework, Display System (LCD, LED, OLED, QLED, Foldable).</p> <p>1.3 Component of Multimedia: text, graphics, audio, video and animation 2D and 3D.</p> <p>1.4 Color models like RGB, CMYK, HSV, YIQ, saturation and brightness.</p>   | <p>Demonstration</p> <p>Presentations</p> <p>Hands-on</p> <p>Lecture Using Chalk-Board</p> |
| 2     | <p>TLO 2.1 Convert text one form to another format.</p> <p>TLO 2.2 Describe different effects on text.</p> <p>TLO 2.3 Describe various image file formats.</p> <p>TLO 2.4 Compare Lossy and Lossless image compression techniques.</p> <p>TLO 2.5 Compare characteristics of 2D and 3D images.</p> | <p><b>Unit - II Text and Image Editing</b></p> <p>2.1 Types of text format: plain text, RTF, PDF format.</p> <p>2.2 Conversion of text one form to another format. Text effects (Ketchup, rope, Fire).</p> <p>2.3 Graphics format: -Vector graphics formats: SVG, WMF, EPS, PDF, CDR -Raster Format: JPEG, PNG, TIFF, PNG, GIF, WebP, BMP and MPEG4.</p> <p>2.4 Image compression techniques Lossy and Lossless.</p> <p>2.5 Image effects: broken mirror effect, flaming ball effects, water drop effect.</p> <p>2.6 2D and 3D images.</p> | <p>Demonstration</p> <p>Presentations</p> <p>Hands-on</p> <p>Lecture Using Chalk-Board</p> |

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| Sr.No | Theory Learning Outcomes (TLO's) aligned to CO's.   | Learning content mapped with Theory Learning Outcomes (TLO's) and CO's.  | Suggested Learning Pedagogies.  |
|-------|---|--|---|
| 3     | TLO 3.1 Describe features of given audio file formats.<br>TLO 3.2 Compare Lossless vs Lossy compression.  | <b>Unit - III Working with Audio</b><br>3.1 Digital audio, Features of audio file formats: mp3, wav, mpeg7, mpeg21.<br>3.2 Lossless compressed audio format, Lossy compressed audio format.<br>3.3 MIDI, Mono, Stereo.<br>3.4 File Size.   | Demonstration<br>Presentations<br>Flipped Classroom<br>Hands-on                   |
| 4     | TLO 4.1 Explain digital video standards.<br>TLO 4.2 Describe features of given video file format.<br>TLO 4.3 Explain working of video streaming.<br>TLO 4.4 Describe different types of Animations. | <b>Unit - IV Working with Videos and Animations</b><br>4.1 Digital video, Broadcast video standards.<br>4.2 Video file formats: MPEG7, AVI, MP4, WMV.<br>4.3 Video Streaming: Introduction, Difference between streaming and downloading, working of streaming, buffering, factors affecting streaming.<br>4.4 Types of Animation: Object (Rolling Ball and Bouncing Ball) and Process animation, 2D, 3D, motion capture, motion graphics, morphing. | Presentations<br>Video<br>Demonstrations<br>Hands-on<br>Lecture Using Chalk-Board |
| 5     | TLO 5.1 Describe concept of action script.<br>TLO 5.2 Write steps to develop a webpage and upload or publish web page.<br>TLO 5.3 Explain concept of Virtual, Augmented and Mixed Reality.          | <b>Unit - V Webpage Designing with Multimedia Components</b><br>5.1 Programming concepts with respect to action script: variables, data types, conditionals, loops, arrays, functions.<br>5.2 Design web pages using Hypertext and Hypermedia.<br>5.3 Upload or publish web page.<br>5.4 Fundamentals and gadgets of Virtual, Augmented and Mixed Reality.   | Presentations<br>Video<br>Demonstrations<br>Presentations<br>Site/Industry Visit  |

**VI. LABORATORY LEARNING OUTCOME AND ALIGNED PRACTICAL / TUTORIAL EXPERIENCES.**

| Practical / Tutorial / Laboratory Learning Outcome (LLO)   | Sr No | Laboratory Experiment / Practical Titles / Tutorial Titles  | Number of hrs. | Relevant COs |
|--|-------|---|----------------|--------------|
| LLO 1.1 Implement different color models on image.<br>LLO 1.2 Convert given image format into other format for optimum solution. | 1     | a. *Manipulate color related attributes of given images using any graphical processing tools on RGB, CMYK, HSV, YIQ color models.<br>b. *Convert given image into different image formats, observe and report the changes in image with respect to quality and file size. | 2              | CO1<br>CO2   |
| LLO 2.1 Implement various effects on text.   | 2     | *Apply different effects on text using 2D image processing software such as:<br><ul style="list-style-type: none"><li>• Drop shadow</li><li>• Mirror</li><li>• Reflection</li></ul>   | 2              | CO2          |

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| <b>Practical / Tutorial / Laboratory Learning Outcome (LLO)</b>  | <b>Sr No</b> | <b>Laboratory Experiment / Practical Titles / Tutorial Titles</b>  | <b>Number of hrs.</b> | <b>Relevant COs</b> |
|--|--------------|--|-----------------------|---------------------|
| LLO 3.1 Implement different effects on image.  | 3            | Apply different effects on GIF image using 2D image processing software such as: <ul style="list-style-type: none"> <li>• Image mirroring</li> <li>• Rainy season effect</li> </ul>                        | 2                     | CO2                 |
| LLO 4.1 Create advertising banner.   | 4            | Design advertising banner using graphics processing tools.   | 2                     | CO2                 |
| LLO 5.1 Create wallpaper showing water drop effect on image.   | 5            | Design wallpaper showing water drop effect on GIF image using any 2D image processing software.  | 2                     | CO2                 |
| LLO 6.1 Design poster by using different text effect.  | 6            | *Apply different effects on text to design poster using 2D image processing software such as: <ul style="list-style-type: none"> <li>• Ketchup</li> <li>• Rope</li> <li>• Fire</li> <li>• Fruit</li> </ul> | 2                     | CO2                 |
| LLO 7.1 Implement given style on image.  | 7            | Apply different style effects in JPEG image using 2D image processing software.  | 2                     | CO2                 |
| LLO 8.1 Implement Audio editing operations.  | 8            | *Apply convert, merge, cut and join operation on digital audio files.  | 2                     | CO3                 |
| LLO 9.1 Implement Video editing operations.  | 9            | Apply convert, merge, cut and join operation on video using video processing tool.   | 2                     | CO4                 |
| LLO 10.1 Apply shape twinning and motion effect in 2D animation.   | 10           | Apply shape twinning and motion in 2D animation using 2D animation software.   | 2                     | CO5                 |
| LLO 11.1 Apply bouncing and rolling ball down effect in 2D animation.  | 11           | *Apply bouncing and rolling ball down in 2D animation using 2D animation software.   | 2                     | CO5                 |
| LLO 12.1 Embed animation with audio into web page.   | 12           | * Develop webpage which show animation with sound effect using any professional HTML5 editor.  | 2                     | CO3<br>CO6          |
| LLO 13.1 Embed MP4 video into webpage.   | 13           | * Develop webpage by embedding video using any professional HTML5 editor.  | 2                     | CO4<br>CO6          |
| LLO 14.1 Embed Video Streaming on Web Page.  | 14           | Develop a webpage for embedded video streaming using professional HTML5 editor.  | 2                     | CO4<br>CO6          |
| LLO 15.1 Create simple animation.  | 15           | *Create animation for rotating ball with action script using animation software such as Blender.   | 2                     | CO5<br>CO6          |
| LLO 16.1 Apply Augmented Reality phenomena using relevant gadgets.   | 16           | * Identify and experience Augmented Reality phenomena using gadgets such as smart phone/ google glass.   | 2                     | CO6                 |
| <b>Note : Out of above suggestive LLOs -</b> <ul style="list-style-type: none"> <li>• '* Marked Practicals (LLOs) Are mandatory.</li> <li>• Minimum 80% of above list of lab experiment are to be performed.</li> <li>• Judicial mix of LLOs are to be performed to achieve desired outcomes.</li> </ul> |              |  |                       |                     |

## VII. SUGGESTED MICRO PROJECT / ASSIGNMENT/ ACTIVITIES FOR SPECIFIC LEARNING / SKILLS DEVELOPMENT (SELF LEARNING)

### Micro project

- The microproject has to be industry application based, internet-based, workshop-based, laboratory-based or field-based as suggested by Teacher.
- Produce your college video for annual event.
- Design banner for departmental event.
- Develop interactive animated web page.
- Create animation clip for internal working of any one machine.
- Develop 2D animation clip for any cartoon story of 5 min.
- Produce 2D animation clip for advertising any product.

### Other

- Explore information about mixed reality tools.
- Complete any one course related to multimedia on Infosys Springboard.
- Use ChatGPT/H20.ai or any other AI tool to explore information about image types and their differences.

### Note :

- Above is just a suggestive list of microprojects and assignments; faculty must prepare their own bank of microprojects, assignments, and activities in a similar way.
- The faculty must allocate judicious mix of tasks, considering the weaknesses and / strengths of the student in acquiring the desired skills.
- If a microproject is assigned, it is expected to be completed as a group activity.
- SLA marks shall be awarded as per the continuous assessment record.
- If the course does not have associated SLA component, above suggestive listings is applicable to Tutorials and maybe considered for FA-PR evaluations.

## VIII. LABORATORY EQUIPMENT / INSTRUMENTS / TOOLS / SOFTWARE REQUIRED

| Sr.No | Equipment Name with Broad Specifications   | Relevant LLO Number |
|-------|--|---------------------|
| 1     | Pencil 2D, OpenOffice draw, Microsoft Paint or any other such software.  | 1,5                 |
| 2     | Pencil 2D, Blender or any such software.   | 10,11               |
| 3     | Pencil 2D, Blender or any such software<br>Notepad++ or any advance HTML5 editor                                     | 12,13,14,15         |
| 4     | Smart Phone / Google Glass or any other such device.   | 16                  |
| 5     | GIF Animator online tools: www.fotor.com any other such software.  | 2,3,4,7             |
| 6     | Online Tool: <a href="https://flamingtext.com/">https://flamingtext.com/</a> or any other such tool.                 | 6                   |
| 7     | MP3 Cutter or any such software.   | 8                   |
| 8     | OpenShot Video Editor, Video Maker or any other such software.   | 9                   |
| 9     | Hardware: Computer (i3 onwards), with minimum 4GB RAM.<br>Operating System: Windows 7/10/11 or Linux latest version. | All                 |

## IX. SUGGESTED WEIGHTAGE TO LEARNING EFFORTS & ASSESSMENT PURPOSE (Specification Table)

| Sr.No | Unit | Unit Title | Aligned COs | Learning Hours | R-Level | U-Level | A-Level | Total Marks |
|-------|------|------------|-------------|----------------|---------|---------|---------|-------------|
|-------|------|------------|-------------|----------------|---------|---------|---------|-------------|

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| Sr.No              | Unit | Unit Title                                   | Aligned COs | Learning Hours | R-Level  | U-Level  | A-Level  | Total Marks |
|--------------------|------|--|-------------|----------------|----------|----------|----------|-------------|
| 1                  | I    | Introduction to Multimedia                   | CO1         | 2              | 0        | 0        | 0        | 0           |
| 2                  | II   | Text and Image Editing                       | CO2         | 4              | 0        | 0        | 0        | 0           |
| 3                  | III  | Working with Audio                           | CO3         | 2              | 0        | 0        | 0        | 0           |
| 4                  | IV   | Working with Videos and Animations           | CO4,CO5     | 4              | 0        | 0        | 0        | 0           |
| 5                  | V    | Webpage Designing with Multimedia Components | CO6         | 3              | 0        | 0        | 0        | 0           |
| <b>Grand Total</b> |      |  |             | <b>15</b>      | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b>    |

**X. ASSESSMENT METHODOLOGIES/TOOLS****Formative assessment (Assessment for Learning)**

- Continuous assessment based on process and product related performance indicators.
- Each practical will be assessed considering 60% weightage to process 40% weightage to product.

**Summative Assessment (Assessment of Learning)**

- NA

**XI. SUGGESTED COS - POS MATRIX FORM**

| Course Outcomes (COs) | Programme Outcomes (POs)                     |                       |                                       |                        |  |                         |                         | Programme Specific Outcomes* (PSOs) |       |       |
|-----------------------|--|-----------------------|---------------------------------------|------------------------|--|-------------------------|-------------------------|-------------------------------------|-------|-------|
|                       | PO-1 Basic and Discipline Specific Knowledge | PO-2 Problem Analysis | PO-3 Design/ Development of Solutions | PO-4 Engineering Tools | PO-5 Engineering Practices for Society, Sustainability and Environment | PO-6 Project Management | PO-7 Life Long Learning | PSO-1                               | PSO-2 | PSO-3 |
| CO1                   | 1  | -                     | -                                     | 1                      | -  | -                       | -                       |                                     |       |       |
| CO2                   | 1  | -                     | -                                     | 1                      | -  | -                       | -                       |                                     |       |       |
| CO3                   | 1  | -                     | -                                     | 1                      | 1  | -                       | 1                       |                                     |       |       |
| CO4                   | 1  | 1                     | -                                     | 1                      | 1  | -                       | 2                       |                                     |       |       |
| CO5                   | 1  | 2                     | 1                                     | 2                      | 1  | 1                       | 2                       |                                     |       |       |
| CO6                   | 2  | 1                     | 2                                     | 1                      | 1  | 1                       | 2                       |                                     |       |       |

Legends :- High:03, Medium:02,Low:01, No Mapping: -  
\*PSOs are to be formulated at institute level

**XII. SUGGESTED LEARNING MATERIALS / BOOKS**

| Sr.No | Author        | Title                         | Publisher with ISBN Number   |
|-------|---------------|-------------------------------|--|
| 1     | Tay Vaughan   | Multimedia: Making it work,9e | McGraw Hill Education, New Delhi 2015, ISBN:9780071832885                                |
| 2     | Parekh Ranjan | Principles of Multimedia 2e   | McGraw Hill Education, New Delhi.2015, ISBN-13: 978-1-25-900650-0 ISBN-13: 1-25-900650-6 |

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| Sr.No | Author      | Title                      | Publisher with ISBN Number               |
|-------|-------------|----------------------------|--|
| 3     | Colin Moock | Essential ActionScript 3.0 | O'Reilly Media, Inc. ISBN: 9780596526948 |

**XIII . LEARNING WEBSITES & PORTALS**

| Sr.No | Link / Portal   | Description                               |
|-------|---|---|
| 1     | <a href="https://helpx.adobe.com/in/animate/how-to/create-2d-animation.html">https://helpx.adobe.com/in/animate/how-to/create-2d-animation.html</a>   | 2D animation                              |
| 2     | <a href="https://photography.tutsplus.com/tutorials/learn-2d-animation-basics-in-blender--cms-41862">https://photography.tutsplus.com/tutorials/learn-2d-animation-basics-in-blender--cms-41862</a>   | 2D animation                              |
| 3     | <a href="https://www.gimp.org/tutorials/">https://www.gimp.org/tutorials/</a>   | Image editing                             |
| 4     | <a href="https://www.tutorialspoint.com/multimedia/">https://www.tutorialspoint.com/multimedia/</a>   | Multimedia concept                        |
| 5     | <a href="http://edutechwiki.unige.ch/en/AS3_Tutorials_Beginner">http://edutechwiki.unige.ch/en/AS3_Tutorials_Beginner</a>   | ActionScript                              |
| 6     | <a href="https://www.cloudflare.com/learning/performance/what-is-streaming/">https://www.cloudflare.com/learning/performance/what-is-streaming/</a>   | Video Streaming                           |
| 7     | <a href="https://www.youtube.com/watch?v=vz0UUVDt2ps">https://www.youtube.com/watch?v=vz0UUVDt2ps</a>   | Virtual Reality and Augmented Reality     |
| 8     | <a href="https://drive.uqu.edu.sa/_/mskhayat/files/MySubjects/20178FS%20Multimedia%20Systems/Fundamentals_of_multimedia_2e.pdf">https://drive.uqu.edu.sa/_/mskhayat/files/MySubjects/20178FS%20Multimedia%20Systems/Fundamentals_of_multimedia_2e.pdf</a> | Fundamentals of Multimedia by Li, Ze-Nian |

**Note :**

- Teachers are requested to check the creative common license status/financial implications of the suggested online educational resources before use by the students

**MSBTE Approval Dt. 02/07/2024****Semester - 3, K Scheme**