

**Savitribai Phule Pune University**  
**Faculty of Science and Technology**

**Board of Animation**

**Syllabus to conduct online theory exam for**  
**B. Sc. Animation | Academic Year 2020-21**

As discussed in the meeting of the BoS, 70% of the total syllabus was decided to be considered for the conduct of the examinations. The list below has the subject wise details of the syllabus where the Units considered for exams are listed. **Please read the number and the names of the Units carefully.**

# F Y B Sc Animation (Yearly pattern)

| Subject  | Chapters   |
|--|--|
| <b>Introduction to Elements of Information Technology (AN- 1101)</b> | <p><b>1 Introduction</b><br/>           1.1 Characteristics of computer<br/>           1.2 Evolution of computer<br/>           1.3 Computer generations</p> <p><b>2 Basic Computer organization</b><br/>           2.1 Input unit<br/>           2.2 Output unit<br/>           2.3 Storage unit<br/>           2.4 ALU,CU,CPU<br/>           2.5 The system Concept</p> <p><b>3 Number Systems</b><br/>           3.1 What is decimal , Binary, Octal , Hexadecimal number system<br/>           3.2 Converting from one number system to another</p> <p><b>4 Processor and Memory</b><br/>           4.1 Detail Central processing Unit<br/>           4.2 Detail study of Main Memory</p> <p><b>5 Secondary Storage Devices</b><br/>           5.1 Sequential and Direct-Access Devices<br/>           5.2 Magnetic Disks<br/>           5.3 Optical Disks<br/>           5.4 Memory storage Devices</p> <p><b>6 Input-Output Devices</b><br/>           6.1 What is input and output device<br/>           6.2 Keyboard<br/>           6.3 Point-and-Draw Device<br/>           6.4 Monitors<br/>           6.5 VDU<br/>           6.6 Plotters<br/>           6.7 Printer and types of printer</p> <p><b>7 Computer Program</b><br/>           7.1 What is Algorithm?<br/>           7.2 Sample Algorithms<br/>           7.3 Representation of algorithm<br/>           7.4 What is Flow chart?<br/>           7.5 Why to use flow charts</p> |

|  |  |
|--|--|
|  | <p>7.6 Flowchart symbols<br/> 7.7 Levels of flowchart<br/> 7.8 Flowcharting rules<br/> 7.9 Advantages and disadvantages of flowcharts</p> <p><b>8 Computer Languages</b><br/> 8.1 Machine language<br/> 8.2 Assembly language<br/> 8.3 High-level language</p> <p><b>9 Operating Systems</b><br/> 9.1 What is operating system?<br/> 9.2 Main functions of Operating systems<br/> 9.3 What is process<br/> 9.4 Process management in early systems<br/> 9.5 Memory management<br/> 9.6 File management<br/> 9.7 Device management<br/> 9.8 Security</p>  |
| <p><b>Introduction to Programming Languages (AN1102)</b></p> | <p><b>1 Introduction to C</b><br/> 1.1 History<br/> 1.2 Structure of a C program<br/> 1.3 Functions as building blocks<br/> 1.4 Keywords<br/> 1.5 Identifiers<br/> 1.6 Variables<br/> 1.7 Constants character, integer, float, string, escape sequences<br/> 1.8 Data types:-built-in and user defined<br/> 1.9 Operators and Expressions: Operator types (arithmetic, relational, logical, assignment, bitwise, conditional, other operators),<br/> 1.10 Precedence and associativity rules.<br/> 1.11 Simple programming</p> <p><b>2 Control Structures 14</b><br/> 2.1 Decision making structures: If, if-else, switch<br/> 2.2 Loop Control structures: While, do-while, for<br/> 2.3 Nested structures<br/> 2.4 break and continue</p> <p><b>3 Functions in C</b><br/> 3.1 Array declaration, initialization<br/> 3.2 Types one, two and multidimensional<br/> 3.3 Passing arrays to functions<br/> 3.4 What is pointer?<br/> 3.5 Use of pointer.</p> |

3.6 Implementation of pointer

3.7 What is structure?

3.8 What is use of structures?

3.9 Creating structure

#### **4 Arrays, pointers and structures**

4.1 Array declaration, initialization

4.2 Types one, two and multidimensional

4.3 Passing arrays to functions

4.4 What is pointer?

4.5 Use of pointer.

4.6 Implementation of pointer

4.7 What is structure?

4.8 What is use of structures?

4.9 Creating structure

#### **5 Introduction OOP**

5.1 What is OOP

5.2 Major and Minor pillars of OOP

5.3 Concept, Benefits and Application of OOP

5.4 Structure of C++ Programming

5.5 Tokens, expressions and control structures, keywords,

5.6 Identifiers, data types & operators in C++.

#### **6 Functions in C++**

6.1 Function Prototyping

6.2 The Main Function

6.3 Call by value, Call by reference

6.4 Return by reference

6.5 Inline Functions

6.6 Default arguments

6.7 Const Argument

6.8 Function overloading

6.9 Friend and Virtual functions

6.10 Math Library Functions

#### **7 Class and Objects**

7.1 Introduction to classes and creating objects

7.2 Defining Member Function

7.3 A C++ Program with Class

7.4 Nesting Member Function

7.5 Private Member function

7.6 Array with class

7.7 Memory allocation for objects

7.8 Static data member

7.9 Static member function

7.10 Array to objects

|  |   |
|--|---|
|  | <p>7.11 Objects as function arguments<br/> 7.12 Friendly function<br/> 7.13 Returning object<br/> 7.14 Constructor<br/> 7.15 All different type of constructor<br/> 7.16 destructors</p>  |
| <p><b>Basics of Animation (AN- 1103)</b></p> | <p><b>1 History of Animation</b><br/> 1.1. The Art of Walt Disney<br/> 1.2. The Encyclopedia of Animation</p> <p><b>2 Introduction to Animation</b><br/> 2.1. Animation for Storytelling<br/> 2.2. Origins of Story</p> <p><b>3 Terms used in Animation</b><br/> 3.1. Production Cycle<br/> 3.2. Dope Sheet</p> <p><b>4 Types of Animation</b><br/> 4.1 Cel Animation<br/> 4.2 Web Animation</p> <p><b>5 Skills for Animation Artist</b><br/> 5.1. Making Model Puppets<br/> 5.2. Animating Objects</p> <p><b>6 Basic Principles of Animation</b><br/> 6.1. Explain the Basic Principles<br/> 6.2. Explain with Acting</p> <p><b>7 Animator's Drawing Tools</b><br/> 7.1. Image Capture<br/> 7.2. Collage</p> <p><b>8 Rapid Sketching &amp; Drawing</b><br/> 1.1. Basic Sketching<br/> 1.2. Develop Drawing Skill</p> <p><b>9 Developing Animation Character</b><br/> 1.1. Drawing Character<br/> 1.2. Drawing Background</p> <p><b>10 Anatomy &amp; Body Language</b><br/> 10.1. Character Anatomy<br/> 10.2. Animal Anatomy</p> |

|   |   |
|---|---|
|   | <p><b>11 Introduction to equipment required for animation</b><br/> 11.1.Tracking Shots<br/> 11.2.Pencil Test</p> <p><b>12 Developing the characters with computer animation.</b><br/> 12.1.Adapting to Digital<br/> 12.2.Lip Synch</p>  |
| <p><b>Foundation Art<br/>(AN- 1104)</b></p> | <p><b>1 Skills required for an Animation Artist 8</b><br/> 1.1 Introduction to Visual and Creative development of an artist.<br/> 1.2 Introduction to Light &amp; shade.<br/> 1.3 Introduction to Grayscale pencil shading.</p> <p><b>2 Introduction to Colors</b><br/> 2.1 Different types of Methods Additive and Subtractive<br/> 2.2 Introduction to Pigment colors<br/> 2.3 Introduction to Harmony and Schemes<br/> 2.4 Tint, Shade, Value<br/> 2.5 Warm Colors<br/> 2.6 Cool Colors</p> <p><b>3 Introduction to Visual Design</b><br/> 3.1 Elements and Principles of Design<br/> 3.2 Elements of Design<br/> 3.3 Line<br/> 3.4 Color<br/> 3.5 Shape<br/> 3.6 Categories<br/> 3.7 Texture<br/> 3.8 Space<br/> 3.9 Form</p> <p><b>4 Principles of design</b><br/> 4.1 Unity/Harmony<br/> 4.2 Methods<br/> 4.3 Balance<br/> 4.4 Types<br/> 4.5 Scale/proportion<br/> 4.6 Dominance/emphasis<br/> 4.7 Similarity and contrast</p> <p><b>5 Introduction to Design</b><br/> 5.1 Introduction to 2D Design and 3D Design<br/> 5.2 Elements of 2D and 3D Design<br/> 5.3 How to create 2D and 3D Design using Elements and Principles.</p> <p><b>6 Introduction to Volume Construction</b><br/> 6.1 Heads</p> |

|  |  |
|--|--|
|  | <p>6.2 Key Lines<br/>6.3 Volume Construction<br/>6.4 Balance<br/>6.5 Muscles</p> <p><b>7 Introduction to Perspective Drawing</b><br/>7.1 Introduction to Perspective<br/>7.2 Different types of Perspective<br/>7.3 Different types of Eye Levels</p> <p><b>8 Introduction to Human Figure</b><br/>8.1 Introduction to gestures Draw<br/>8.2 Introduction to Quick Sketches<br/>8.3 Drawing Human Figures<br/>8.4 Basic Proportions</p>  |
| <p><b>Computer Based<br/>2D Animation<br/>(AN- 1105)</b></p> | <p><b>1 Overview of Flash</b><br/>1.1. Workflow Basics<br/>1.2. Establish the concept and goals<br/>1.3. Producing, Testing, and staging the presentation.</p> <p><b>2 Introduction to the flash interface</b><br/>2.1. Start Page<br/>2.2. Managing windows and Panel<br/>2.3. Creating custom workspace Layouts</p> <p><b>3 Setting stage dimensions, working with panels, panel layouts</b><br/>3.1. Managing Windows and Panels<br/>3.2. The Tool Panels<br/>3.3. The Document</p> <p><b>4 Introduction to drawing and drawing tools in Flash</b><br/>4.1. Geometric Shape Tools<br/>4.2. Drawing Tools<br/>4.3. Using Fill and Stroke Controls</p> <p><b>5 Panels - Description , modifying , Saving &amp; deleting a panel 4</b><br/>5.1. Controlling the Tools Panel<br/>5.2. Reading the tools Panel<br/>5.3. Customizing the tools panel</p> <p><b>6 Layers &amp; Views</b><br/>6.1. Creating Layers<br/>6.2. Editing frames and layers<br/>6.3. Using Frame view options</p> <p><b>7 Shaping Objects – Overview of shapes, Drawing &amp; Modifying</b></p> |

|   |   |
|---|---|
|   | <p><b>Shapes</b><br/> 7.1. Designing and Aligning Elements<br/> 7.2. Simplifying snapping setting<br/> 7.3. Design Panels</p> <p><b>8 Basic Principles of Text</b><br/> 8.1. Text Field Types in Flash<br/> 8.2. The Text Tool and the Properties Panel<br/> 8.3. Front Export and Display</p> <p><b>11 Animation -Principles , Frame by frame animation, tweening, masks</b><br/> 11.1. Basic Method of Flash Animation<br/> 11.2. Frame by Frame Animation<br/> 11.3. Using Tweens for Animation</p>  |
| <p><b>Introduction to Graphics (AN- 1106)</b></p> | <p><b>About Adobe Photoshop</b></p> <p><b>1 Workspace</b><br/> 1.1 Workspace basic<br/> 1.2 Palettes and Menus<br/> 1.3 Toolbar – selection tools, painting tools, editing and retouching tools, zoom tools<br/> 1.4 Viewing images<br/> 1.5 Ruler, Guide and Grids</p> <p><b>3 Colors</b><br/> 3.1 About color<br/> 3.2 Color modes<br/> 3.3 Converting between color modes</p> <p><b>4 Introduction to Menu</b><br/> 4.1 File<br/> 4.2 Edit<br/> 4.3 Image<br/> 4.4 View</p> <p><b>5 Selecting</b><br/> 5.1 Making selections<br/> 5.2 Adjusting pixel selections<br/> 5.3 Moving and copying selected pixels<br/> 5.4 Deleting and extracting objects<br/> 5.5 Saving selections and using masks</p> <p><b>6 Introduction to Menu – Layer</b><br/> 6.1 Layers<br/> 6.2 Selecting, grouping, and linking layers</p> |



- 6.3 Moving, stacking, and locking layers
- 6.4 Managing layers
- 6.5 Setting opacity and blending
- 6.6 Layer effects and styles
- 6.7 Adjustment and fill layers
- 6.8 Masking layers
- 6.9 Introduction to Channels

## **8 Introduction to Types**

- 8.1 Different Types Tools
- 8.2 Character Panel
- 8.3 Paragraph

## **9 Menu – Filters**

- 9.1 Introduction to Filter basics
- 9.2 Filter effect
- 9.3 Applying specific filters
- 9.4 Add Lighting Effects
- 9.5 Liquify filter
- 9.6 Vanishing Point
- 9.7 Create panoramic images

## **About Adobe Illustrator**

## **12 Introduction to new document**

- 12.1 Selection tool
- 12.2 Group selection
- 12.3 Selection lassos
- 12.4 Magic wand selection
- 12.5 The Pen Tools
- 12.6 convert anchor point

## **13 Layers and Grouping**

- 13.1 layers introduction
- 13.2 Organizing layers
- 13.3 selecting layers
- 13.4 Grouping layers
- 13.5 Group selection
- 13.6 Duplicating layers
- 13.7 Sub-layers
- 13.8 Collect and flatten
- 13.9 Creating templates
- 13.10 Placing paths

## **14 Introduction to the Stroke**

- 14.1 The Stroke
- 14.2 Stroke basics

14.3 Capitals and joining

14.4 The dashed line

14.5 Scaling strokes

## **15 Introduction to Type**

15.1 The type tool

15.2 Area type tool

15.3 Path type

15.4 Vertical type tool

15.5 Block text

15.6 Rows and columns

15.7 Wrap text

15.8 Missing font

15.9 Creating outlines

15.10 Spell checking

15.11 Font attributes

15.12 Character palette

15.13 Formatting paragraphs

15.14 Type transformation

## **16 Introduction to Shape Objects**

16.1 Rectangle tool

16.2 Rounded rectangle tool

16.3 Ellipse tool

16.4 Polygon tool

16.5 Star tool

16.6 Flare tool

16.7 The spaz modifier

16.8 Transformations

## **18 clipping masks**

18.1 Clipping paths

18.2 Applying Color

18.3 Color introduction

18.4 Adobe color picker

18.5. color palette

18.6 Swatches palette

18.7 Color picker theft

18.8 The Pencil Tools

18.9 Basic pencil tool

18.10 Smooth tool

18.11 Eraser tool

## **21 Liquefy**

21.1 Liquefy tools

21.2 More lignifications, Appearance and Styles, Styles introduction

|  |  |
|--|--|
|  | <p>21.3 Multiple strokes and fills, Converting effect to shape, Group appearance</p> <p>21.4 The text bug, Distort and transform, Offset path effect</p> <p>21.5 Pathfinder effects, Rasterizing</p> <p>21.6 Document rasterization, Stylize effects, Pixel effects, Warp effects</p> <p>21.7 Moving and linking styles, Sticky styles, Reducing and clearing styles</p> <p>21.8 Making and saving styles, Over-riding character color</p> <p>21.9 Filter introduction, Creating trim marks</p> <p>21.10 Pen and ink, More lignifications, The Blend Tool</p> <p>21.11 Blending introduction, Blending multiple objects</p> <p>21.12 Customizing the Keyboard, Creating your own shortcuts</p>   |
| <p><b>Elements of 3D Design (AN- 1107)</b></p>                                 | <p><b>1 Concept of 3 Dimension</b></p> <p>1.1. Concept of CGI.</p> <p>1.2. Production Workflow of CGI.</p> <p>1.3. Basic Introduction concept of 3D Software's (3ds Max and Maya).</p> <p><b>2 Beginning Concept Modeling in Maya</b></p> <p>2.1. Introduction of Maya Interface.</p> <p>2.2. Polygon Basic Modeling.</p> <p>2.3. Basic Polygon Editing Tools.</p> <p>2.4. NURBS Basic Modeling.</p> <p>2.5. Basic NURBS Editing Tools</p> <p><b>3 Idea of Shading &amp; Texturing</b></p> <p>3.1. Introduction Types of Shader.</p> <p>3.2. Texture and Surface.</p> <p>3.3. Basic UV Mapping.</p> <p>3.4. Texture Nodes.</p> <p>3.5. Importing an Image File as a Texture.</p> <p><b>6 Basic Material And Rendernig in 3D Max</b></p> <p>6.1. The Material Editor.</p> <p>6.2. Material Types.</p> <p>6.3. Basic Introduction of Lighting.</p> <p>6.4. Creating Shadow.</p> <p>6.5. Basic Rendering setup.</p> |
| <p><b>Introduction to Mass Communication and Media Literacy (AN- 1108)</b></p> | <p><b>1 Mass Communication, culture &amp; Media literacy</b></p> <p><b>3 Media, Media Industries &amp; Media Audiences</b></p> <p>3.1 Books (6)</p> <p>3.2 Newspapers (4)</p> <p>3.3 Magazines (5)</p> <p>3.4 Films (5)</p>  |

|  |   |
|--|---|
|  | <p>3.5 Radio &amp; Recording (5)</p> <p>3.6 Television &amp; Mobile Video (6)</p> <p>3.7 Video Games (5)</p> <p>3.8 The internet &amp; Web (5)</p> <p><b>4 Supporting Industries</b></p> <p>4.1 Public Relations (6)</p> <p>4.2 Advertising (8)</p> <p>4.3 Theories &amp; Effect of Mass Communication (6)</p> <p>4.5 Media Freedom, Regulations and ethics (8)</p> <p>4.6 Global Media (8)</p> |
|--|---|

# S Y B Sc Animation

## Semester II

| Subject                                | Chapter   |
|--|---|
| <b>Value Education II<br/>(AN2201)</b> | <p style="text-align: center;"><b>2 Components of Communication, Principles of communication Barriers, Listening Skills</b></p> <p>2.1 Components of communication<br/>           2.2 Principles of Communication<br/>           2.3 Overcoming Communication barriers<br/>           2.4 Public Speaking</p> <p>a. Group Discussion<br/>           b. Oral Presentation skills, perfect interview<br/>           c. Listening skills</p> <p>2.5 Use of presentation graphics &amp; Aids<br/>           2.6 Study of Communication</p> <p style="text-align: center;"><b>3. Inter-Personal Communication and Non Verbal Communication</b></p> <p>3.1 Inter-Personal Communication<br/>           3.2 Johari Window<br/>           3.3 Open Self: (Arena)<br/>           3.4 Blind Self<br/>           3.5 Hidden Self (Façade)<br/>           3.6 Undiscovered Self<br/>           3.7 Other important variables in Inter-Personal Communication<br/>           3.8 Advantages and Disadvantages of Oral Communication<br/>           3.9 Face-to-Face Communication</p> <p>3.9.1 Nature and Important<br/>           3.10 Difference between “Face-to-face” and “Oral” Communication<br/>           3.10.1 Limitations<br/>           3.11 Speaking Skill</p> <p>3.11.1 Expressive Style<br/>           3.11.2 Directive Style<br/>           3.11.3 Problem-Solving Style<br/>           3.11.4 Meta Style<br/>           3.12 Telephonic Meetings<br/>           3.13 Small Group Discussion</p> <p>3.13.1 Committee and Conference<br/>           3.13.2 Variables Affecting Group Communication<br/>           3.14 Meetings<br/>           3.15 Participant’s Responsibilities<br/>           3.16 Leader’s Responsibilities<br/>           3.16 Non Verbal Communication</p> |

|                                      |  |
|--------------------------------------|--|
|                                      | <p>3.16.1 Difference between Verbal and Non-Verbal Communication</p> <p>3.17 Importance of Non-Verbal Communication</p> <p>3.18 Functions of Non-Verbal Communication</p> <p>3.19 Role of Non-Verbal Communication</p> <p>3.20 Major Categories of Non-Verbal Language</p> <p>3.21 How to Handle Question and Answer Sessions</p> <p><b>4. Written Communication</b></p> <p>4.1 Meaning of Written Communication</p> <p>4.2 Characteristics of Written Communication</p> <p>4.3 Objectives of Written Communication</p> <p>4.4 Communication Problems of Writers</p> <p>4.5 Pointers and Structure of Written Communication</p> <p>4.6 Essentials of Effective Written Communication</p>   |
| <p><b>3D Production (AN2202)</b></p> | <p><b>Chapter 1: Sculpting Concepts</b></p> <p><b>1.1 Comparing Traditional and Digital Sculpting</b></p> <p>Workspace</p> <p>Armatures</p> <p>Lighting</p> <p>Sculpting Tools</p> <p><b>1.2 Anatomy for Sculptors</b></p> <p>Skeleton</p> <p>Muscles</p> <p>Skin and Fat</p> <p><b>1.3 Proportions and Measurements</b></p> <p>Proportions</p> <p>Measurements</p> <p><b>1.4 Form, Negative Space, and Gesture</b></p> <p>Form</p> <p>Negative Space</p> <p>Gesture</p> <p><b>Chapter 2: Introduction to Mudbox</b></p> <p><b>2.1 Interface Overview</b></p> <p><b>2.2 What You Will Need to Work InMudbox</b></p> <p><b>2.3 A 3D Primer</b></p> <p>Understanding 3D Space</p> <p>Polygon Basics</p> <p>Resolution</p> <p>UV Mapping</p> <p>Digital Images</p> <p><b>2.4 Mudbox Hotkeys</b></p> <p><b>2.5 Quickstart Tutorial: Sculpting a Bell Pepper</b></p> <p>Setting Up the Scene</p> <p>Selecting and Scaling a Model</p> |

|  |   |
|--|---|
|  | <p>Creating a Layer and Subdividing<br/> Roughing In the Shape<br/> Sculpting Details<br/> Adding Texture with a Stencil</p> <p><b>Chapter 4: Sculpting a Figure</b><br/> <b>4.1 Anatomy Primer</b><br/> Navigating Anatomical Space<br/> Quick Overview of Muscle Anatomy<br/> Character Proportions<br/> <b>4.2 Subdividing and Adding a New Layer</b><br/> <b>4.3 Sculpting Muscle Masses</b><br/> <b>4.4 The Torso</b><br/> <b>4.5 The Upper Limb</b><br/> <b>4.6 The Lower Limb</b><br/> <b>4.7 Sculpting the Head and Face</b><br/> Refining the Face and Ear<br/> <b>4.8 Final Details</b></p> <p><b>Chapter 6: Creating Displacement Maps 145</b><br/> <b>6.1 Normal Maps</b><br/> <b>6.2 Displacement Maps</b><br/> <b>6.3 Extracting Displacement Maps</b><br/> Exporting a Low-Resolution Model<br/> <b>6.4 Applying Mudbox Displacement Maps</b><br/> 3ds Max<br/> Maya and Mental Ray<br/> Modo<br/> Cinema 4D</p> |
| <p><b>Introduction to Action Script (AN2203)</b></p> | <ol style="list-style-type: none"> <li>1. Introduction to ActionScript <ol style="list-style-type: none"> <li>1.1. Variables and its scope in flash</li> <li>1.2. Working with strict data type variables</li> <li>1.3. Arithmetic operations with numbers and string data type</li> </ol> </li> <li>2. Conditional Logic <ol style="list-style-type: none"> <li>2.1. Script control</li> <li>2.2. Multiple conditions</li> <li>2.3. Nested conditions</li> <li>2.4. Control user interaction</li> <li>2.5. Switch Cases</li> </ol> </li> <li>3. Arrays <ol style="list-style-type: none"> <li>3.1 Understanding of Array</li> <li>3.2 Properties and methods</li> <li>3.3 Multidimensional arrays</li> <li>3.4 Use of Array</li> </ol> </li> </ol>   |

|   |  |
|---|--|
|   | <p>4. Loops</p> <p>4.1 Importance of Loops</p> <p>4.2 Types of loops</p> <p>4.3 Nested loops</p> <p>4.4 Loop Conditions</p> <p>5. Functions</p> <p>5.1 Understanding the role of functions</p> <p>5.2 Creating functions</p> <p>5.3 Reuse of function</p> <p>5.4 Passing parameters to function</p> <p>5.5 Local Variables</p> <p>5.6 Return type functions</p> <p>6. Event Handler</p> <p>6.1 Understanding of events</p> <p>6.2 Event listener</p> <p>6.3 Callbacks</p> <p>7. Creating Dynamic Assets</p> <p>7.1 Attach Movie clips</p> <p>7.2 Creating empty movie clips</p> <p>7.3 Using movie clip as a button</p> <p>7.4 Creating dynamic text field</p> <p>7.5 Working with drawing API</p> |
| <p><b>Multimedia Communication (AN2204)</b></p> | <p><b>1. Multimedia Communications</b></p> <p>1.1-Introduction.</p> <p>1.2- Multimedia communications Model.</p> <p>1.3-Elements of multimedia Systems.</p> <p>1.4-User requirements.</p> <p>1.5-Network requirements.</p> <p><b>2. Overview of multimedia Software tools.</b></p> <p>2.1-Music sequencing Notation.</p> <p>2.2-Digital Audio.</p> <p>2.3-Graphics &amp; Image editing.</p> <p>2.4-Video editing.</p> <p>2.5-Animation.</p> <p><b>3. Graphics &amp; Image data representation.</b></p> <p>3.1- Graphics Image data types.</p> <p>3.2-Fil Formats.</p> <p><b>4. Audio Visual Integration.</b></p> <p>4.1-Introduction.</p> <p>4.2-Media Interaction</p>                             |



|   |  |
|---|--|
|   | <p>4.3-Bimodality of Human Speech.</p> <p>4.4-Lip reading.</p> <p>4.5-Lip Synchronization.</p> <p>4.6-Lip tracing.</p>   |
| <p><b>Advance Techniques of Animation II (AN2205)</b></p> | <p>1. Dynamics<br/>What is particles?<br/>Dynamics in VFX<br/>Particles Tools in Animation Software</p> <p>3. Titles<br/>Title Sequence Workflow<br/>Text Background Integration<br/>Horror Film Titles<br/>Three-Dimensional Text</p> <p>5. Cut Out Animation<br/>Scope in the cut out animation. E.g.Material<br/>Creating animation using software<br/>Importing character<br/>Distributing character on different layer.<br/>Animating characters.</p>   |
| <p><b>Production Process II (AN2206)</b></p>              | <p><b>Chapter 1: Script Writing (8)</b><br/>1.1Introduction to Script writing<br/>1.2 The language of cinema<br/>1.3 Requirement for the script<br/>1.4 Scenes &amp; Shots</p> <p><b>Chapter 2: Exposure Sheet (5)</b><br/>2.1 Introduction to Exposure sheet/x-sheet<br/>2.2 Preparing X – Sheets</p> <p><b>Chapter 4: Story board (10)</b><br/>4.1 Introduction to Thumbnails<br/>4.2 The frame /Aspect ratio<br/>4.3 Types of story boards<br/>4.4 Scene and shots<br/>4.5 Different types of camera angle<br/>4.6 The language of storyboards</p> <p><b>Chapter 6: Animatics (5)</b><br/>6.1 Preparing the Animatics<br/>6.2 Preparing Animatics using Digital Software (Flash)</p> <p><b>Chapter 7: Layout Design (10)</b><br/>7.1 Technical and creative<br/>7.2 Camera, Framing, Posing, Layout composing</p> |

|  |   |
|--|---|
|  | 7.3 Hook-Up, Pan Shot, Dynamic shot, Re-use, Cross Dissolve,<br>7.4 Match Moving, Loop Pan, Zip Pan, Expressions, Body<br>Language. |
|--|---|

# T Y B Sc Animation

## Semester IV

| Subject                                     | Topic  |
|---|--|
| <b>IPR and Cyber Security Code (AN3201)</b> | <p><b>Unit 1: Introduction to Intellectual Property Rights</b></p> <ol style="list-style-type: none"> <li>1. Introduction to IPR</li> <li>2. Need of Intellectual Property Protection</li> <li>3. Introduction to Patents &amp; Copyright</li> <li>4. History of IPR</li> <li>5. Trade and Investment</li> </ol> <p><b>Unit 2: Introduction to Copyright, Software and Internet</b></p> <ol style="list-style-type: none"> <li>1. Introduction</li> <li>2. Copyright as a Stimulus To Creation</li> <li>3. Copyright And Access</li> <li>4. Copyright and Computer Software</li> </ol> <p><b>Unit 3: The Patent System</b></p> <ol style="list-style-type: none"> <li>1. Introduction</li> <li>2. Scope of Patentability</li> <li>3. Patentability Standards</li> <li>4. Exceptions to Patent Rights</li> <li>5. Patenting in India</li> <li>6. Process of Patenting in India</li> </ol> <p><b>Unit 4: Basic Security Concepts</b></p> <p><b>1. Overview of Networking Concepts:</b></p> <ol style="list-style-type: none"> <li>1. Basics of Communication Systems</li> <li>2. Transmission Media</li> <li>3. ISO/OSI and TCP/IP Protocol Stacks</li> <li>4. Local Area Networks</li> <li>5. Wide Area Networks</li> <li>6. Internetworking</li> <li>7. Packet Formats</li> <li>8. Wireless Networks</li> <li>9. Internet</li> </ol> <p><b>2. Basics of Information Security:</b></p> <ol style="list-style-type: none"> <li>1. Information Security Overview</li> <li>2. Information Security Services</li> <li>3. Types of Attacks</li> <li>4. Goals for Security</li> <li>5. E-commerce Security</li> <li>6. Computer Forensics</li> <li>7. Security Engineering</li> </ol> <p><b>3. Steganography:</b></p> |

|  |  |
|--|--|
|  | <ol style="list-style-type: none"> <li>1. Introduction to Steganography</li> <li>2. Steganography types, Image Steganography.</li> <li><b>4. Watermarking:</b> <ol style="list-style-type: none"> <li>1. Introduction to watermarking</li> <li>2. Watermarking types</li> <li>3. Digital watermarking</li> <li>4. Applications.</li> </ol> </li> <li><b>5. Security Threats and vulnerabilities</b> <ol style="list-style-type: none"> <li>1. Overview of Security threats</li> <li>2. Hacking Techniques</li> <li>3. Password Cracking</li> <li>4. Insecure Network connections</li> <li>5. Malicious Code</li> <li>6. Programming Bugs</li> <li>7. Cybercrime and Cyber terrorism</li> <li>8. Information Warfare and Surveillance</li> </ol> </li> <li><b>6. Basics of Cryptography</b> <ol style="list-style-type: none"> <li>1. Introduction to Cryptography</li> <li>2. Symmetric key Cryptography</li> <li>3. Asymmetric key Cryptography</li> <li>4. Mechanisms of cryptography</li> <li>5. Message Authentication and Hash functions</li> <li>6. Digital Signatures</li> <li>7. Public Key infrastructure</li> <li>8. Applications of Cryptography</li> </ol> </li> </ol>   |
| <p><b>User Interface Design (AN3202)</b></p> | <ol style="list-style-type: none"> <li><b>1. Overview of UXI Design</b> <ol style="list-style-type: none"> <li><b>1.1 Design: Good User Interface, covering important Design principals and the Human capabilities</b><br/>How to design good user interfaces, covering important design principles (learn ability, visibility, error prevention, efficiency, and graphic design) and the human capabilities that motivate them (including perception, motor skills, color vision, attention, and human error).</li> <li><b>1.2 Implementation : Techniques for building user interfaces</b><br/>Techniques for building user interfaces, including low-fidelity prototypes, Wizard of Oz, and other prototyping tools; input models, output models, model-view-controller, layout, constraints, and toolkits.</li> <li><b>1.3 Evaluation:</b> Techniques for evaluating and measuring interface usability. We will learn techniques for evaluating and measuring interface usability, including heuristic evaluation, predictive evaluation, and user testing.</li> <li><b>1.4 Research :Research Involving Novel User Interface</b><br/>How to conduct empirical research involving novel user interfaces</li> <li><b>1.5 Efficiency and Measurements</b></li> </ol> </li> </ol> |

- 1.5.1 User interface Design and implementation
- 1.5.2 Human information Processing
- 1.5.3 Point Efficiency
  - Fitts's Law & steering Law
- 1.5.4 Design Principles
  - Shortcuts
  - Defaults, history, and anticipation
  - Anticipation
- 1.5.5 Predicating efficiency
  - Keystroke –level model(KLM)
  - Heuristics Rules

## **2**

### **2.1 Errors and User Controls**

- 2.1.1 Human Error
- 2.1.2 Error Prevention
- 2.1.3 Error Messages
- 2.1.4 User Control & Freedom

### **2.2 Task Analysis**

- 2.2.1 User Analysis
- 2.2.2 Task Analysis
- 2.2.3 Domain Analysis
- 2.2.4 Requirements Analysis

### **2.3 Creating Designs**

- 2.3.1 Sketching
- 2.3.2 Scenarios
- 2.3.3 Storyboards
- 2.3.4 Design Patterns
- 2.3.5 Simplicity

## **3 UI Software Architecture**

### **3.1 Design Patterns for GUIs**

- View Tree
- Listener
- Widgets
- Model-View-Controller

### **3.2 Approaches to GUI Programming**

- Procedural
- Declarative
- Direct manipulation

### **3.3 Web UI at Lightning Speed**

- HTML
- JavaScript

### **3.4 Layout**

- CSS
- Automatic Layout
- Constraints

|  |  |
|--|--|
|  | <p><b>3.5 Input</b></p> <ul style="list-style-type: none"> <li>- Input Events</li> <li>- State Machines</li> <li>- Event Dispatch and Propagation</li> </ul> <p><b>4. Prototyping</b></p> <p><b>4.4.1 Prototyping &amp; user Interface</b></p> <p>4.1.1 Paper Prototypes</p> <p>4.1.2 Computer Prototypes</p> <p>4.1.3 Wizard of OZ Prototypes</p> <p><b>4.2 Graphics Design</b></p> <p>4.2.1 Human Perception</p> <ul style="list-style-type: none"> <li>-Chunking</li> <li>-Visual variables</li> <li>-Gestalt Principles</li> </ul> <p>4.2.2 Graphic Design Guideline</p> <ul style="list-style-type: none"> <li>- Simplicity</li> <li>- Contrast</li> <li>- White Space</li> <li>- Balance</li> <li>- Alignment</li> </ul> <p><b>4.3 Information Visualization</b></p> <p>4.3.1 Motivation</p> <p>4.3.2 Using space well</p> <p>4.3.3 Interactivity</p> <p>4.3.4 Toolkits for Visualization</p> <p><b>4.4 Color Design and Typography</b></p> <p>4.4.1 Color</p> <ul style="list-style-type: none"> <li>- Human Vision</li> <li>- Color Models</li> <li>- Design guidelines</li> </ul> <p>4.4.2 Typography</p> <ul style="list-style-type: none"> <li>- Readability</li> <li>- Font metrics</li> <li>- Spacing</li> <li>- Typefaces</li> </ul> |
| <p><b>Game Production<br/>(AN3203)</b></p> | <p><b>Unit 1.0 Introduction to UNITY</b></p> <p>1.1 Introduction to gaming and game development process</p> <p>1.2 Unity Basics</p> <p>1.3 Interface</p> <p>1.4 Inspector</p> <p>1.5 Project and Hierarchy</p> <p><b>Unit 2.0 Project management and Importing assets</b></p> <p>2.1 Working with projects</p> <p>2.2 Creating projects</p>  |

|  |  |
|--|--|
|  | <p>2.3 Importing Geometry<br/>2.4 Importing Textures</p> <p><b>Unit 3.0 Materials</b><br/>3.1 Working with materials<br/>3.2 Creating materials<br/>3.3 Adding materials to game objects</p> <p><b>Unit 4.0 Level creation</b><br/>4.1 Creating a level using the imported game assets<br/>4.2 Adding and managing collisions<br/>4.3 Character controller</p> <p><b>Unit 5.0 Lighting</b><br/>5.1 Creating lights<br/>5.2 Lighting Scene<br/>5.3 Baking Lights</p>  |
| <p><b>Motion Graphics<br/>(AN3204)</b></p> | <p><b>Unit II The Sequential Composition</b><br/>The Sequential Composition<br/>2.1 Overview<br/>2.2 Forms of continuity<br/>2.3 Forms of Discontinuity<br/>2.4 Montage</p> <p><b>Unit III Conceptualization</b><br/>3.1 Assessment<br/>3.2 Formulation<br/>3.3 Cultivation<br/>3.4 Storyboards<br/>3.5 Animatics</p> <p><b>Unit IV Animation Processes</b><br/>4.1 Frame-by-frame Animation<br/>4.2 Interpolation<br/>4.3 Spatial Interpolation<br/>4.4 Visual Interpolation<br/>4.5 Temporal Interpolation<br/>4.6 Coordinating Movement</p> |
| <p><b>VFX – II<br/>(AN3205)</b></p>        | <p><b>1. Stereoscopic 3d Conversion and VFX</b><br/>· Stereoscopy and psychological aspect of 3D<br/>· Stereoscopic Shooting ( Using 3Ds Max or Maya Camera tool)<br/>· Narrative Grammar<br/>· 2D to 3D Conversion</p> <p><b>2. 3D Objects and Match moving</b></p>   |

|                                      |   |
|--------------------------------------|---|
|                                      | <ul style="list-style-type: none"> <li>· Exploring a typical Match movie</li> <li>· Moving From 2D to 3D and Back again</li> <li>· Understanding the match moving process</li> <li>· Adding Rough Geometry and Refining the Camera</li> <li>· Creating a Camera Rig</li> </ul> <p><b>3. VFX Compositing [10]</b></p> <ul style="list-style-type: none"> <li>· Digital Compositing with CGI</li> <li>· Compositing Visual Effects</li> <li>· 3D Compositing</li> <li>· Stereo Compositing</li> </ul>   |
| <p><b>New Media<br/>(AN3206)</b></p> | <p><b>Unit 2- Online Journalism</b><br/> What is online journalism? : Earlier websites of newspapers, E-books and E-publishing Introduction to content management system Hyper-textuality, Multi-mediality and interactivity<br/> Use of various online tools to manage text, links, photos, maps, audio, video, etc. Status of online journalism today</p> <p><b>Unit 3- New Media I</b><br/> Digital storytelling: Tools of multimedia journalists;<br/> Learn to report, write and produce in a manner that is appropriate for online media Feature writing for online media:<br/> Story idea, development and news updates Podcast and Webcast</p> <p><b>Unit 4- New Media II</b><br/> Open source journalism: Responding to the audience, Annotative reporting Citizen Journalists Problem of verification, accuracy and fairness Use of blogs, tweets, etc. for story generation and development Protecting copyright Exploring Cyberspace:</p> |