Ahmednagar Jilha Maratha Vidya Prasarak Samaj's

New Arts, Commerce and Science College, Ahmednagar

(Autonomous)

(Affiliated to Savitribai Phule Pune University, Pune)

Choice Based Credit System (CBCS)

Bachelor of B. Sc (Animation)

Syllabus of

F. Y. B. Sc Animation

Implemented from

Academic year 2021 -22

Ahmednagar Jilha Maratha Vidya Prasarak Samaj's

New Arts, Commerce and Science College, Ahmednagar

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Board of studies in Animation

Sr. No.	Name	Designation
1.	Prof. Santosh M Thube	Chairman
2.	Dr. Yogesh Deshpande	Academic Council Nominee
3.	Dr. Pallavi S Meshram	Academic Council Nominee
4.	Dr. Sameer S Sahasrabudhe	Vice Chancellor Nominee
5.	Mr. Deepak N Chaudhari	Alumni
6.	Prof. Binoj V John	Industry Expert
7.	Prof.Manohar B Gobare	Member (co-opt)
8.	Prof.Sameer S Nerlekar	Member (co-opt)
9.	Prof.Madhura M Khoje	Member (co-opt)

1. Prologue/ Introduction of the programme:

B.Sc. Animation or Bachelor of Science in Animation is an undergraduate Animation and multimedia Course. This program offers advanced skills in Computer Animation concepts and technique. BSc Animation or Bachelor of Science in Animation deals with the process of drawing, designing, and preparation of photographic sequences which are integrated with gaming and multimedia. The 3-year six semesters course is offered at our college.

This course covers from Basics of animation. 2D, 3D, Graphic Designing, SFX, VFX, Gaming, Web designing, Editing, Compositing. A career in B. Sc. in Animation or a career in VFX offers quite a number of possibilities as the job scene is quite fertile in India. The scope of animation is promising because the program is designed to offer an advanced learning experience and hone their skills.

In this modern age, presentation has a lot importance. Advertising perform most vital role in all businesses. In order to make attractive advertisement it need animation design. Animation is not limited to develop cartoon film. Now animation has wide spectrum due to computer technology. Using computer technology animation is used in 3D modelling of building, Robotics, Artificial Intelligence, E Learning, online Education, Interior Design, Website Development, Decoration, Gaming, Security, modelling, Logo designing, Poster design, Advertisement, Conferencing ideology presentation, Fashion Designing, Visual Effects in film making and entertainment etc.

Animation is the field where man power is needed, but with skill that has human's bright imagination and computer technology together. In computer technology gaming is most demanded field in which it requires extra ordinary brilliance of human resources which is not available in most IT industries. In Animation field there are bright chances of self-employment.

We are proud that, we are having best Animation Center in Savitribai Phule University in all respects including the strength of students, quality and quantity, qualified faculty and lab facilities.

2. Programme outcomes (Pos)

Students enrolled in the program complete a curriculum that exposes and trains students in a full range of essential skills and abilities. They will have the opportunity to master the following objectives.

I. To familiarize the students with various approaches, methods and techniques of Animation Technology.
II. To develop competencies and skills needed for becoming an effective Animator.
III. Mastering traditional & digital tools to produce stills and moving images.
IV. Exploring different approaches in computer animation.
V. To enable students to manage Animation Projects from its Conceptual Stage to the final Product creation.
VI. To train students in applying laws of human motion and psychology in 2-D or 3-D Characters.
VII. To develop expertise in life-drawing and related techniques.
VIII. To apply Audio and Video Production Techniques to an Animation Project.

I. Programme Structure and Course Titles

Sr. No.	Class	Semester	Course Code	Course Title	Credits
1.	**F.Y.B. Sc**	**I**	**BSC-AN 101 T**	**Basics of Animation-I**	**2**
2.	**F.Y.B. Sc**	**I**	**BSC-AN 102 T**	**Foundation of Art**	**2**
3.	**F.Y.B. Sc**	**I**	**BSC-AN 103 T**	**Digital Graphics-I**	**2**
4.	**F.Y.B. Sc**	**I**	**BSC-AN 104 T**	**Programming Languages-I**	**2**
5.	**F.Y.B. Sc**	**I**	**BSC-AN 105 T**	**3D Visualization-I**	**2**
6.	**F.Y.B. Sc**	**I**	**BSC-AN 106 T**	**Information Technology**	**2**
7.	**F.Y.B. Sc**	**I**	**BSC-AN 107 T**	**Creative Writing**	**2**
8.	**F.Y.B. Sc**	**I**	**BSC-AN 108 T**	**Art in Game**	**2**
9.	**F.Y.B. Sc**	**I**	**BSC-AN 109 P**	**Foundation of Art**	**1.5**
10.	**F.Y.B. Sc**	**I**	**BSC-AN 110 P**	**Programming Language-I**	**1.5**
11.	**F.Y.B. Sc**	**I**	**BSC-AN 111 P**	**3D Visualization-I**	**1.5**
12.	**F.Y.B. Sc**	**I**	**BSC-AN 112 P**	**Digital Graphics I**	**1.5**
13.	**F.Y.B. Sc**	**II**	**BSC-AN 201 T**	**Basics of Animation-II**	**2**
14.	**F.Y.B. Sc**	**II**	**BSC-AN 202 T**	**Digital Filmmaking**	**2**
15.	**F.Y.B. Sc**	**II**	**BSC-AN 203 T**	**Digital Graphics-II**	**2**
16.	**F.Y.B. Sc**	**II**	**BSC-AN 204 T**	**Programming Languages-II**	**2**
17.	**F.Y.B. Sc**	**II**	**BSC-AN 205 T**	**3D Visualization-II**	**2**
18.	**F.Y.B. Sc**	**II**	**BSC-AN 206 T**	**Stop Motion Animation**	**2**
19.	**F.Y.B. Sc**	**II**	**BSC-AN 207 T**	**2D Animation**	**2**
20.	**F.Y.B. Sc**	**II**	**BSC-AN 208 T**	**Typography**	**2**
21.	**F.Y.B. Sc**	**II**	**BSC-AN 209 P**	**Stop motion and Programming Language-II**	**1.5**
22.	**F.Y.B. Sc**	**II**	**BSC-AN 210 P**	**2D Animation**	**1.5**
23.	**F.Y.B. Sc**	**II**	**BSC-AN 211 P**	**3D Visualization-II**	**1.5**
24.	**F.Y.B. Sc**	**II**	**BSC-AN 212 P**	**Digital Graphics-II**	**1.5**
25.	**S.Y.B. Sc**	**III**	**BSC-AN 301 T**	**3D Production-I**	**2**
26.	**S.Y.B. Sc**	**III**	**BSC-AN 302 T**	**Animation Technique**	**2**

27.	**S.Y.B. Sc**	**III**	**BSC-AN 303 T**	**Graphics Arts**	**2**
28.	**S.Y.B. Sc**	**III**	**BSC-AN 304 T**	**Multimedia System**	**2**
29.	**S.Y.B. Sc**	**III**	**BSC-AN 305 T**	**Production Process**	**2**
30.	**S.Y.B. Sc**	**III**	**BSC-AN 306 T**	**Audio Production**	**2**
31.	**S.Y.B. Sc**	**III**	**BSC-AN 307 P**	**Animation Technique & Audio Production**	**2**
32.	**S.Y.B. Sc**	**III**	**BSC-AN 308 P**	**3D Production-I**	**2**
33.	**S.Y.B. Sc**	**III**	**BSC-AN 309 P**	**Graphics Arts**	**2**
34.	**S.Y.B. Sc**	**III**	**BSC-AN 310 T**	**Critical Thinking and Scientific Temper**	**2**
35.	**S.Y.B. Sc**	**III**	**BSC-AN 311 T**	**English / Hindi Communication**	**2**
36.	**S.Y.B. Sc**	**III**	**BSC-AN 312 T**	**Advance Anatomy**	**2**
37.	**S.Y.B. Sc**	**III**	**BSC-AN 313 P**	**Advance Anatomy (Practical)**	**2**
38.	**S.Y.B. Sc**	**IV**	**BSC-AN 401 T**	**3D Production-II**	**2**
39.	**S.Y.B. Sc**	**IV**	**BSC-AN 402 T**	**Motion Graphics**	**2**
40.	**S.Y.B. Sc**	**IV**	**BSC-AN 403 T**	**Web Development**	**2**
41.	**S.Y.B. Sc**	**IV**	**BSC-AN 404 T**	**Augmented/Virtual Reality**	**2**
42.	**S.Y.B. Sc**	**IV**	**BSC-AN 405 T**	**Direction for Animation**	**2**
43.	**S.Y.B. Sc**	**IV**	**BSC-AN 406 T**	**Digital Photography**	**2**
44.	**S.Y.B. Sc**	**IV**	**BSC-AN 407 P**	**Motion Graphics**	**2**
45.	**S.Y.B. Sc**	**IV**	**BSC-AN 408 P**	**3D Production-II**	**2**
46.	**S.Y.B. Sc**	**IV**	**BSC-AN 409 P**	**Web Development**	**2**
47.	**S.Y.B. Sc**	**IV**	**BSC-AN 410 T**	**Environmental Awareness**	**2**
48.	**S.Y.B. Sc**	**IV**	**BSC-AN 411 T**	**English / Hindi Communication**	**2**
49.	**S.Y.B. Sc**	**IV**	**BSC-AN 412 T**	**2D Character Animation**	**2**
50.	**S.Y.B. Sc**	**IV**	**BSC-AN 413 P**	**2D Character Animation (Practical)**	**2**
51.	**T.Y.B. Sc**	**V**	**BSC-AN 501 T**	**User Interface**	**2**
52.	**T.Y.B. Sc**	**V**	**BSC-AN 502 T**	**Game Design**	**2**
53.	**T.Y.B. Sc**	**V**	**BSC-AN 503 T**	**Visual Effect-I**	**2**

54.	**T.Y.B. Sc**	**V**	**BSC-AN 504 T**	**Advanced Programming**	**2**
55.	**T.Y.B. Sc**	**V**	**BSC-AN 505 T**	**Digital Marketing-I**	**2**
56.	**T.Y.B. Sc**	**V**	**BSC-AN 506 T**	**Digital Editing-I**	**2**
57.	**T.Y.B. Sc**	**V**	**BSC-AN 507 P**	**User Interface and Advanced Programming**	**2**
58.	**T.Y.B. Sc**	**V**	**BSC-AN 508 P**	**Game Design**	**2**
59.	**T.Y.B. Sc**	**V**	**BSC-AN 509 P**	**Visual Effects & Digital Editing-I**	**2**
60.	**T.Y.B. Sc**	**V**	**BSC-AN 510 T**	**3D Character Animation**	**2**
61.	**T.Y.B. Sc**	**V**	**BSC-AN 511 P**	**3D Character Animation (Practical)**	**2**
62.	**T.Y.B. Sc**	**VI**	**BSC-AN 601 T**	**IPR & Cyber Security**	**2**
63.	**T.Y.B. Sc**	**VI**	**BSC-AN 602 T**	**Game Production**	**2**
64.	**T.Y.B. Sc**	**VI**	**BSC-AN 603 T**	**Visual Effects-II**	**2**
65.	**T.Y.B. Sc**	**VI**	**BSC-AN 604 T**	**Concept Development**	**2**
66.	**T.Y.B. Sc**	**VI**	**BSC-AN 605 T**	**Media Communication**	**2**
67.	**T.Y.B. Sc**	**VI**	**BSC-AN 606 T**	**Digital Editing-II**	**2**
68.	**T.Y.B. Sc**	**VI**	**BSC-AN 607 P**	**Game Production**	**2**
69.	**T.Y.B. Sc**	**VI**	**BSC-AN 608 P**	**Visual Effects and Digital Editing-II**	**2**
70.	**T.Y.B. Sc**	**VI**	**BSC-AN 609 P**	**Internship**	**2**
71.	**T.Y.B. Sc**	**VI**	**BSC-AN 610 T**	**Digital Painting & Illustration**	**2**
72.	**T.Y.B. Sc**	**VI**	**BSC-AN 611 P**	**Digital Painting & Illustration (Practical)**	**2**

Semester-I	**Paper-I**
Course Code: BSC-AN 101 T	**Title of the Course: Basics of Animation-I**
Credits: 2	**Total Lectures: 30 Hrs**

Course Outcomes (Cos)

1) This course will offer skill development in the use of software to develop storyboards and 2-dimentional animation including creating, importing and sequencing media elements to create multi-media presentations.

Emphasis will be on conceptualization, creativity, and visual aesthetics.

2) This course takes the students through various aspects of animation using a variety of 2 dimensional software.

3) Developing concepts, storyboarding and production of several 2 dimensional animations will be accomplished.

Detailed Syllabus:

Unit I: History of Animation – World **(06 lectures)**

1. American Animation: Disney (Beginning of animation)
2. Russian Animation: Soyuz Multifilm
3. Other countries animation

Unit II: History of Animation – India **(06 lectures)**

1. Films Division
2. Bhimsain, Ram Mohan, Ajit Rao, NID

Unit III: Animation Glossary **(5 lectures)**

1. Terms used in 2D Animation
    a. Key frames, storyboard, In-between, staging, character design, backgrounds, sound breakdown, dope sheet etc.
2. Terms used in 3D Animation & VFX, Modeling, Rigging...

Unit IV: Types of Animation **(8 lectures)**

1. Traditional Animation
2. 2D Animation
3. 3D Animation
4. Stop Motion Animation
5. Motion Graphics

Unit V: Basic Principles of Animation **(08 lectures)**

1. Explain the Basic Principles
2. Explain with Acting

Unit VI: Role of Audio in Animation. **(05 lectures)**

1. Background Music.
2. Voice over.
3. Foley Track.

Unit VII: Appreciation of 6 all-time classic animation films **(02 lectures)**

- Demonstrate the shots, have discussion, explain details of the film

Suggested Readings:

1. The Complete Animation course by Chris Patmore, Barons Educational Series (New York)
2. Anatomy of the Artist – Thompson & Thompson
3. The Animator's Survival Kit by Richard E. Williams (Author)
4. The ILLUSION OF LIFE: DISNEY ANIMATION (Disney Editions Deluxe) by Frank Thomas

Semester-I	**Paper-II**
Course Code: BSC-AN 102 T	**Title of the Course: Foundation of Art**
Credits: 2	**Total Lectures: 30 Hrs**

Course Outcomes (Cos)

1)Understand the formal elements of art and/or design through art analysis and develop competency in their application through studio practice.

2) Learn how to use materials, tools and processes, effectively and safely, from a variety of media (painting, sculpture, ceramic, photography), to create original works of art.

3) Select appropriate media to convey specific artistic expression that effectively communicates the artist intent.

4) Develop creative problem-solving strategies as a means to create strong artwork.

5) Demonstrate critical skills through specific class projects.

6) Present, discuss, and support artwork through individual and group critiques

Detailed Syllabus:

Unit I: Skills required for an Animation Artist **(04 lectures)**

1. Introduction to Visual and Creative development of an artist.
2. Introduction to Light & shade.
3. Introduction to Grayscale pencil shading.

Unit II: Introduction to Colors **(04 lectures)**

1. Different types of Methods Additives and Subtractive
2. Introduction to Pigment colors
3. Introduction to Harmony and Schemes
4. Tint, Shade, Value
5. Warm Colors
6. Cool Colors

Unit III: Elements of Visual Design **(04 lectures)**

1. Line
2. Color
3. Shape
4. Value
5. Texture
6. Space
7. Form
8. Typeface.

Unit IV: Principles of design and Gestalt Theory **(02 lectures)**

1. Unity/Harmony
2. Balance
3. Scale/proportion
4. Dominance/emphasis
5. Similarity
6. Proximity
7. Contrast
8. Figure and Ground
9. Symmetry
10. Order
11. Continuation
12. Closure

Unit V: Introduction to 2D, 3D Design and Typography **(02 lectures)**

1. What is 2D and 3D Design?
2. Fundamentals of Type
3. Features of typography: fonts, kerning, weightages, etc.

Unit VI: Introduction to Human Anatomy **(06 lectures)**

(Ref: Anatomy and Drawing by Victor Perard)

1. Heads
2. Key Lines
3. Volume Construction
4. Balance
5. Muscles
6. Bones and joints

Unit VII: Introduction to Perspective Drawing **(04 lectures)**

1. Different types of Eye Levels
2. Introduction to Perspective
3. Different types of Perspective - One Point Perspective,
4. Two Point Perspective, Three Point Perspective

Unit VIII: Introduction to Foreshortening **(04 lectures)**

1. Hands & Leg
2. Foreshortening
3. Facial expressions
4. Facial expressions
5. Shape and Action
6. Basic Proportions

Unit IX: Introduction to Human Figure **(04 lectures)**

1. Introduction to gestures
2. Introduction to Quick Sketches
3. Drawing Human Figures
4. Sketching from live models

Unit X: Introduction to Cartoon Character **(02 lectures)**

1. Cartoon Volume Construction
2. Anatomy of Cartoon Character
3. Drawing for Animation Characters

Unit XI: Introduction to Animal Anatomy **(04 lectures)**

1. Introduction to Bipeds and quadrupeds.
2. Basic body plan of quadruped Animal – axes and volumes
3. Introduction to Animal skeleton
4. Study of Animal Anatomy – Dog, Horse, Monkey

Suggested Readings:

Reference Books

1. Figure Study Made Easy By- Aditya Chari -- Grace Publication
2. Anatomy and Drawing - Victor Perard
3. Perspective by Milind Mulik -- Jyotsna Prakashan
4. Animal Anatomy for Artists – The Elements of Form – Eliot Goldfinger - Oxford University Press.

Links:

1. http://en.wikipedia.org/wiki/Color_theory
2. http://www.colormatters.com/color-and-design/basic-color-theory
3. http://en.wikipedia.org/wiki/Design_elements_and_principles
4. http://www.usability.gov/what-and-why/visual-design.html
5. http://en.wikipedia.org/wiki/Typography

Semester-I	**Paper-III**
Course Code: BSC-AN 103 T	**Title of the Course: Digital Graphics-I**
Credits: 2	**Total Lectures: 30 Hrs**

Course Outcomes (Cos)

1) Understand and apply the basic principles, techniques, and algorithms for generating and interacting with simple graphical objects on a display screen.

2) Gain awareness of common computer graphics software.

Detailed Syllabus:

Unit I: Understanding concepts of raster, how these two are used various designs, introducing the various raster tools: Paint, Photoshop, and Introduction Variations in Photoshop Software. (02 Lecture)

1. History of Photoshop
2. Adobe Photoshop cs2
3. Adobe Photoshop cs3
4. Adobe Photoshop cs4
5. Adobe Photoshop cs5
6. Adobe Photoshop cs6
7. Adobe Photoshop cc ...

Unit II: Work Environment of Photoshop CC (02 Lecture)

1. Looking at the Work Area
2. Working in 64- and 32-bit modes
3. Customizing Preferences & Keyboard Shortcuts
4. Using the tools & Tool Option

Unit III: Using Adobe Bridge (02 Lecture)

1. Viewing & Editing Files
2. Reading Metadata & Applying Keywords
3. Searching & Filtering
4. Favorites & Collections
5. Introducing Task Automation
6. Exploring Mini Bridge

Unit IV: Working with Selections (03 Lecture)

1. About selecting & selection tools
2. Rectangular & Oval selections
3. Lasso tool, Magnetic Lasso Tool, Polygonal Lasso Tool
4. Magic Wand
5. Quick Selection Tool
6. Feathering - softening selection edges
7. Selecting by Color

Unit V: Understanding Layers **(03 Lecture)**

1. Background layers
2. Creating layers
3. Rearrange & editing layers
4. Opacity & Layer Blending Modes
5. Linking Layers
6. Applying Layer Styles
7. Flattening Layers
8. Layer Comps
9. Duplicating & Aligning Layers
10. Layer Groups

Unit VI: Transforming **(05 Lecture)**

1. Free Transform
2. Mathematical transforms: Flip, Rotate, Arbitrary
3. Scale, Skew, Distort, Perspective
4. Transform with Warp
5. Canvas Rotation

Unit VII: Basic Photo Corrections **(05 Lecture)**

1. Understanding Images: Raster & Vector
2. Image Resolution
3. Exposure & Balance
4. Tonal values & Photography
5. Image Adjustments Options
6. Working with the Adjustments Panel
7. Histogram
8. Levels Dialog Box
9. Curves Dialog Box
10. Straightening & Cropping
11. Using Automatic & Manual Adjustments - Contrast, Shadows & Highlights,
12. Hue & Saturation
13. Replacing colors

14. Dodge, Sponge & Burn tools
15. Black & White Adjustment Feature

Unit VIII: Retouching & Repairing **(02 Lecture)**

1. Clone Stamp Tool & Clone Panel Options
2. Pattern Tool
3. Spot Healing Brush
4. Healing Brush & Patch Tools
5. Red Eye Removal
6. Separate Layer retouching
7. Layers - Auto Align Layers
8. Spherical Alignment
9. Layers -Auto Blend Layers
10. Content Aware Healing & Fills
11. Typography
12. Adding Type
13. Character & Paragraph settings
14. Justification & Hyphenation
15. Tracking, Kerning & Leading
16. Warping Type
17. Type on a Path Vertical Type

Unit IX: Color Modes **(02 Lecture)**

1. Creating New Color Swatches
2. Creating Color Blends/ Gradients
3. Applying color & gradients
4. Hue Sampling Ring

Unit X: Brushes **(02 Lecture)**

1. Working with brushes
2. Changing Brush Options

Unit XI: Correcting Digital Photographs **(02 Lecture)**

1. About Camera Raw
2. Processing Files in Camera Raw
3. Merging exposure and application of advanced color correction
4. Correcting digital photographs in Photoshop
5. Correcting image distortion
6. Working with depth of field
7. Quick Masks & Gradient Masks

Unit XII: Creating & Editing Quick Masks **(02 Lecture)**

1. Saving selections as Masks
2. Alpha Channels
3. Loading Masks as selections
4. Editing Masks
5. Extracting Images
6. Applying Filter Effects to Masked selections
7. Creating Gradient Masks

Unit XIII: Vector Drawing: Paths **(02 Lecture)**

1. Pen Tool
2. Using Paths
3. scalable Objects
4. Shape Layer
5. Importing Smart Objects (Illustrator/ Acrobat)
6. Complex Path editing
7. Compound Paths
8. Saving Paths
9. Clipping & Work Paths
10. Filling & Stroking paths, selections

Unit XIV: Filters **(02 Lecture)**

1. Using filters
2. Gamut & Workflow aspects
3. Stacking Orders & Saving multiple filters
4. Fading Filters (Opacity & Blend Modes)
5. Smart Filters
6. Creating, Saving & Editing Smart filters

Unit XV: Working with 3D images **(02 Lecture)**

1. Creating a 3D shape from a layer
2. Manipulating 3D objects
3. Using 3D panels to adjust lighting and surface textures
4. Merging 2D onto 3D layers
5. Importing 3D Files
6. Painting onto a 3D object
7. Using Repoussé to create 3D text

Unit XVI: What is New? **(02 Lecture)**

1. All-new Smart Sharpen
2. Intelligent up sampling
3. Camera Shake Reduction

4. Editable rounded rectangles
5. Improved 3D painting
6. Improved type styles
7. Improved 3D Scene panel
8. Improved 3D effects

Suggested Readings:

Reference Books:

1)The complete beginners guide to Adobe Photoshop.

Semester-I	**Paper-IV**
Course Code: BSC-AN 104 T	**Title of the Course: Programming Language-I**
Credits: 2	**Total Lectures: 30 Hrs**

Course Outcomes (Cos)

1) Understand the concepts and terms used to describe languages that support the imperative, functional, object-oriented, and logic programming paradigms.

2) Solve problems using the functional paradigm.

3) Solve problems using the object-oriented paradigm.

4) Solve problems using the logic programming paradigm.

5) Critically evaluate what paradigm and language are best suited for a new problem.

Detailed Syllabus:

Unit I: Introduction to Programming **(02 Lectures)**

1. Program and Programming
2. Programming Languages - salient features of each
3. Types of software's - system s/w & application s/w
4. Operating Systems - Windows/Linux/Android/iOS
5. Dos commands
6. Compiler, Interpreter, Loader and Linker, Editors

Unit II: Fundamentals in C **(02 Lectures)**

1. History of 'C'
2. A Simple C Program
3. Program execution phases
4. Backslash character constants - Escape sequences
5. Character set
6. Constants
7. Number systems
8. Format specifiers Identifiers
9. Keywords Variables
10. Data Types
11. Declaration of Variable
12. Assigning Values to Variables
13. Initialization

14. Comments
15. Const Qualifier
16. Basic Structure of a 'C' program

Unit III: Operators and Expressions **(02 Lectures)**

1. Arithmetic operators
2. Increment and decrement operators
3. Relational operators
4. Logical operators
5. The bitwise operators
6. The assignment operators
7. The conditional operator
8. The size of operator
9. The comma operator
10. Type casting operator
11. Other operators
12. Precedence and order of evaluation

Unit IV: Control statements **(02 Lectures)**

1. Conditional Control Statements if
2. if-else
3. nested if-else
4. else-if ladder
5. Multiple Branching Control Statement
6. switch-case
7. Loop Control Statements
8. While
9. do-while
10. for
11. Nested Loops
12. Jump Control statements
13. Break
14. Continue
15. Goto
16. Exit
17. return

Unit V: Function **(02 Lectures)**

1. What is function?
2. Why function?
3. Advantages of using functions
4. Function Prototype
5. Defining a function

6. Calling a function
7. Return statement
8. Types of functions
9. Recursion
10. Nested functions
11. main () function
12. Library Function
13. Local and global variables
14. Creating own header files

Unit VI: Pointer **(02 Lectures)**

1. Def of Pointer
2. Declaration of Pointer Variables
3. Assigning Address to Pointer

Unit VII: Variables **(04 Lectures)**

1. De-referencing Pointer Variables
2. Pointer Arithmetic
3. Pointer comparisons
4. De-reference and increment pointer
5. pointer to const data
6. Void pointer or Generic Pointer
7. Null pointer

Unit VIII: Pointer and Function **(04 Lectures)**

1. Parameter Passing Techniques
2. call by value, call by address
3. Using Pointers as Arguments
4. Function Returning value
5. Returning More than one value from A

Unit IX: Function **(04 Lectures)**

1. Functions Returning Address
2. Function Returning Pointers

Unit X: Argument to other function **(04 Lectures)**

1. Functions with variable number of arguments

Unit XI: Array **(04 Lectures)**

1. One dimensional array
2. Declaration of 1D arrays
3. Initialization of 1D arrays

4. Accessing element of 1D arrays
5. Reading and displaying elements
6. Two dimensional arrays
7. Matrix operations
8. Declaration of 2D arrays
9. Initialization of 2D arrays
10. Accessing element of 2D arrays
11. Reading and displaying elements

Unit XII: Pointer and Array **(02 Lectures)**

1. Pointer and one-dimensional arrays
2. Subscripting pointer variables
3. Pointer to an array

Unit XIII: Array and Function **(02 Lectures)**

1. 1D array and function
   –Passing individual array elements to a function
   –passing whole 1d array to a function
2. 2D array and function
   –Passing individual array elements to a function
   –passing whole 2d array to a function
3. using arrays of function pointer

Unit XIV: Strings **(02 Lectures)**

1. strings versus character arrays
2. Initializing strings
3. Reading string
4. Displaying string
5. The %s format specifier
6. The gets () and puts () functions
7. string handling functions
8. string pointers

Unit XV: Command line arguments **(02 Lectures)**

1. What is command prompt?
2. Why command line?
3. What are command line arguments?

Suggested Readings:

Reference Book

1. Let us C by Yashwant Kanitkar

Semester-I	**Paper-V**
Course Code: BSC-AN 105 T	**Title of the Course: 3D Visualization-I**
Credits: 2	**Total Lectures: 30 Hrs**

Course Outcomes (Cos)

1. This course introduces students to all the major features of Max.
2. Introduction, Modelling, Texturing Rendering and popular workflow.
3. Concepts are quickly reviewed and explained and then demonstrated using Max.
4. Students will gain proficiency by following class examples as well as creating projects and exercises.
5. The coursework is designed to make sure the student is exposed to all relevant aspects of CG creation with Max with an eye toward giving the student a base foundation from which to explore and expand.

Detailed Syllabus:

Unit I: Introduction to 3Ds Max (02 Lectures)

1. 1Interface of 3Ds Max
2. Modeling Concept and Primitives and Modifiers.
3. Explain Editable Polygon and its parameters.
4. Introduction of Spine Modeling
5. Import & Export File Management
6. Project Setting
7. Introduction Material Editor
8. Introduction to Render Settings and Renderers

Unit II: Architectural Visualization (06 Lectures)

1. Introduction Different types of Splines
2. Draw a Plan using line tool in splines to model a House
3. Use spline parameters to Convert splines into polygonal walls and partitions
4. Use of vertex, Segment and spline model
5. Model Stairs Doors and Windows
6. Create Fencing and Gate
7. Create and model Interior goods according the different types rooms
8. Finalize the 3D House with Ground, Vegetation and Environment

Unit III: Vehicle Modeling (6 Lectures)

1. Set the Project
2. Image Plane setup with reference images
3. Staring a Car modelling using a poly plane
4. Blocking a 3D car Model
5. Detach various parts from the model e.g., Door, Wind shield etc
6. Model 3D Wheel, Rim, Tire, Lock, Viper
7. Model Headlight and Tail light
8. Model Seats and an Interior of the Car.

Unit IV: Texturing with Material Editor (8 Lectures)

1. Introduction to Material Editor
2. Different types of Shaders and its Parameters
3. Import Texture image and its coordinates
4. Working with V-ray Shaders,
5. Import V-ray Materials
6. Working with Different types of Maps e.g., Diffuse, Transparency, Reflection, Specular, Bump, Normal etc.
7. UVW Map, Gizmo, Tiling and UV Unwrapping

Unit V: Rendering with V-Ray (7 Lectures)

1. V-Ray Render Settings
2. Atmosphere and Effects
3. V-Ray Environment
4. Exposure Control
5. V-ray Lights Image Based Environment Light using HDRI
6. Finalize Render Setting
7. Final Render with various Render Passes

Unit VI: Bouncing Ball Animation (05 Lectures)

1. Animation Principles: Squash and Stretch
2. Time slider and key frames
3. Frame by frame keying for bouncing steps to animate the ball
4. Graph editor and Tangents
5. Render output in video format or image sequence

Unit VII: Introduction to Biped (06 Lectures)

1. Different types of Biped skeleton
2. Creating modifying Biped
3. Bones and skin
4. Mirror
5. Adjusting Torso and Arms
6. Skin modifier
7. Skin Weighting

Suggested Readings:

Reference Books:

1.Autodesk 3ds Max 2017: A Comprehensive Guide

Semester-I	**Paper-VI**
Course Code: BSC-AN 106 T	**Title of the Course: Information Technology**
Credits: 2	**Total Lectures: 30 Hrs**

Course Outcomes (Cos)

1. Defining a system
2. The role of computer in information systems
3. What are the characteristic and element of information system?
4. What are the various types of information system and models?
5. What are the different types of specialized information system?

Detailed Syllabus:

Unit I:

KNOWING COMPUTER **(6 Lectures)**

1. Introduction
2. Objectives
3. What is Computer?
4. Basic Applications of Computer
5. Components of Computer System
6. Central Processing Unit
7. Keyboard, mouse and VDU
8. Other Input devices
9. Other Output devices
10. Computer Memory
11. Concept of Hardware and Software
12. Hardware
13. Software
14. Application Software
15. Systems software
16. Concept of computing, data and information
17. Applications of IECT
18. e-governance
19. Entertainment
20. Bringing computer to life
21. Connecting keyboard, mouse, monitor and printer to CPU
22. Checking power supply

Unit II:
OPERATING COMPUTER USING GUI BASED OPERATING SYSTEM (5 Lectures)

1. Introduction
2. Objectives
3. Basics of Operating System
4. Operating system
5. Basics of popular operating system (LINUX, WINDOWS)
6. The User Interface
7. Task Bar Icons
8. Menu
9. Running an application Operating System Simple Setting
10. Changing System Date and Time
11. Changing Display Properties
12. To Add or Remove a Windows Component
13. Changing Mouse Properties
14. Adding and removing Printers
15. File and Directory Management
16. Creating and renaming of files and directories
17. Common utilities

Unit III: UNDERSTANDING WORD PROCESSING (6 Lectures)

1. Introduction
2. Objectives
3. Word Processing Basics
4. Opening Word Processing Package
5. Menu Bar
6. Using the Help
7. Using the Icons Below Menu Bar
8. Opening and closing Documents
9. Opening Documents
10. Save and Save as
11. Page Setup
12. Print Preview
13. Printing of Documents
14. Text Creation and manipulation
15. Document Creation
16. Editing Text
17. Text Selection
18. Cut, Copy and Paste

19. Spell check
20. Thesaurus
21. Formatting the Text
22. Font and Size selection
23. Alignment of Text
24. Paragraph Indenting
25. Bullets and Numbering
26. Changing case
27. Table Manipulation
28. Draw Table
29. Changing cell width and height
30. Alignment of Text in cell
31. Delete / Insertion of row and column
32. Border and shading

Unit IV: USING SPREAD SHEET (8 Lectures)

1. Introduction
2. Objectives
3. Elements of Electronic Spread Sheet
4. Opening of Spread Sheet
5. Addressing of Cells
6. Printing of Spread Sheet
7. Saving Workbooks
8. Manipulation of Cells
9. Entering Text, Numbers and Dates
10. Creating Text, Number and Date Series
11. Editing Worksheet Data
12. Inserting and Deleting Rows, Column
13. Changing Cell Height and Width
14. Formulas and Function
15. Using Formulas
16. Function

Unit V: INTRODUCTION TO INTERNET, WWW AND WEB BROWSERS (5 Lectures)

1. Introduction
2. Objectives
3. Basic of Computer Networks
4. Local Area Network (LAN)
5. Wide Area Network (WAN)
6. Internet

7. Concept of Internet
8. Applications of Internet
9. Connecting to the Internet
10. Troubleshooting
11. World Wide Web (WWW)
12. Web Browsing Software's
13. Popular Web Browsing Software's
14. Search Engines
15. Popular Search Engines / Search for content
16. Accessing Web Browser
17. Using Favorites Folder
18. Downloading Web Pages
19. Printing Web Pages
20. Understanding URL
21. Surfing the web
22. Using e-governance website

Unit VI: COMMUNICATIONS AND COLLABORATION (06 Lectures)

1. Introduction
2. Objectives
3. Basics of E-mail
4. What is an Electronic Mail
5. Email Addressing Using E-mails
6. Opening Email account
7. Mailbox: Inbox and Outbox
8. Creating and Sending a new E-mail
9. Replying to an E-mail message
10. Forwarding an E-mail message
11. Sorting and Searching emails
12. Document collaboration
13. Instant Messaging and Collaboration
14. Using Instant messaging
15. Instant messaging providers
16. Netiquettes

Unit VII: MAKING SMALL PRESENTATIONS (04 Lectures)

1. Introduction
2. Objectives

3. Basics Using PowerPoint
4. Opening A PowerPoint Presentation
5. Saving A Presentation
6. Creation of Presentation
7. Creating a Presentation Using a Template
8. Creating a Blank Presentation
9. Entering and Editing Text
10. Inserting and Deleting Slides in a Presentation
11. Preparation of Slides
12. Inserting Word Table or an Excel Worksheet
13. Adding Clip Art Pictures
14. Inserting Other Objects
15. Resizing and Scaling an Object
16. Presentation of Slides
17. Viewing A Presentation
18. Choosing a Set Up for Presentation
19. Printing Slides and Handouts
20. Slide Show 7.6.1 Running a Slide Show
21. Transition and Slide Timings
22. Automating a Slide Show

Suggested Readings:

1. Introduction to Information Technology by Sanjay Saxena, Vikas Publishing House
2. “Fundamentals of Information Technology” by Deepak Bharihoke
3. “Computer Fundamentals and Information Technology” by S S Shrivastava

Semester-I	**Paper-VII**
Course Code: BSC-AN 107 T	**Title of the Course: Creative Writing**
Credits: 2	**Total Lectures: 30 Hrs**

Aims and objectives

Aims:
To introduce students to the skills and knowledge in a range of writing and editing techniques required of the professional writer of short scripts for screen and live performance and to critically engage with concepts and processes of script writing.

Learning Objectives:

After completing this unit of study, students will be expected to understand

1. The processes involved in writing short scripts.
2. Demonstrate understanding of techniques, principles, genres and elements of script writing, for screen and live performance,
3. Research concepts and process of script writing,
4. Develop story, characters and dialogue for scripts,
5. Review, revise and edit script,
6. Communicate ideas clearly in scripts.

Detailed Syllabus:

UNIT I:
How to Write a Screenplay: A Primer **(6 Lectures)**

1. How stories work
2. Situation, conflict, and resolution—the flow of the story
3. The lowdown on high concept
4. Story-layering, plot, and genre
5. Ten keys to creating captivating characters
6. Theme
7. Dialogue, subtext, and exposition
8. How to make a scene
9. Suspense, comedy, and television

UNIT II:

7 Steps to a Stunning Script: A Workbook (6 Lecture)

1. Summon your muse
2. Dream up your movie idea
3. Develop your core story
4. Create your movie people
5. "Step-out" your story
6. Write your first draft
7. Make the necessary revisions

UNIT III

Proper Formatting Technique: A Style Guide (7 Lectures)

1. How to use this guide to craft a compelling and professional screenplay?
2. Sample script (with cross-reference codes)
3. Formatting in a nutshell
4. Overall screenplay appearance
5. Scene headings (slug lines)
6. Narrative description
7. Dialogue
8. How to format TV scripts?
9. Glossary of terms not discussed elsewhere

UNIT IV

Writing and Revising Your Breakthrough Script: A Script Consultant's View (8 Lectures)

1. The spec script—your key to breaking in
2. Key principles and exercises in revising scenes
3. When to break formatting rules?
4. The first 10 pages

UNIT V

How to Sell Your Script: A Marketing Plan (10 Lectures)

1. Five steps to selling your work
2. Protect your work
3. Prepare your script for market
5. Assemble your selling tools
6. Create your strategic marketing plan

7. Implement your plan
8. How to find an agent?
9. Crafting the query
10. How to pitch without striking out?
11. Synopses, one-sheets, treatments, and outlines
12. How to sell your script without an agent?
13. Television markets
14. Jump-start your career now!
15. How to break into Hollywood when you live in Peoria?
16. A personal challenge

UNIT-VI

Case Study **(3 Lectures)**

1. Make a case study on any animated movie.
2. Make a case study on own story (Use Standard References).

References:

- **https://www.keepwriting.com**
- **The Screenwriter's Bible**: A complete guide to Writing, Formatting, and Selling Your
  1. Script **Author**: David Trottier. **ISBN**:9781935247029

Semester-I	**Paper-VIII**
Course Code: BSC-AN 108 T	**Title of the Course: Art in Game**
Credits: 2	**Total Lectures: 30 Hrs**

Course Outcomes (Cos)

1)During the term of the course, students will learn to work within virtual 3-D space and build volumetric objects including: vertices, splines, polygons, primitive shapes and Sub Patch geometry.

2)Students will use these tools to build complex objects then learn the basic 3-D rendering tools and techniques including: surface channels, procedural textures, image mapping, light types and settings, camera settings and use, as well as a variety of rendering options, including ray-tracing. Students will also learn the importance of file backup and management.

Detailed Syllabus:

Unit I: Unit 1. Introduction to Gaming **(10 Lectures)**

1. Origin and growth of gaming industry
2. Gaming: meaning and defining
3. Gaming as modern entertainment

Unit II. Classification and Pre-production of Gaming **(10 Lectures)**

1. Classification of gaming
2. Game production cycle
3. Pre-production – concept and idea
4. Production requirements and planning
5. Modeling and Animations, Interiors - More complex UV mapping, Programmatic Movement.

Unit III. Production **(10 Lectures)**

1. Production – plan implementation,
2. Tracking progress and plan testing
3. Post production – archive and plan for future games

Unit IV. Structure and functioning **(10 Lectures)**

1. Structure and functioning of gaming company:
2. Production, art, engineering, designing,
3. Quality assurance testing
4. Game production team members and responsibilities

Suggested Readings:

1. The Art of Game Design: A Book of Lenses, Third Edition

Semester-I	**Paper-IX**
Course Code: BSC-AN 109 P	**Title of the Course: Foundation of Art**
Credits: 1.5	**Total Practical's: 45 Hrs**

Course Outcomes (Cos)

1. Select appropriate media to convey specific artistic expression that effectively communicates the artist intent.
2. Develop creative problem-solving strategies as a means to create strong artwork.
3. Demonstrate critical skills through specific class projects.
4. Present, discuss, and support artwork through individual and group critiques.

Practical List:

1. Assignment for Drawing Basic Shapes (Two and Three Dimensional)
2. Drawing and developing five objects using Basic shapes. (e.g., Car, Cup and Saucer)
3. Practicing Technique of Pencil Shading.
4. Human Anatomy
5. Perspective Drawing
6. Character Design (Cartoon)
7. Character Model Sheet
8. Drawing Expression Chart for a Character.
9. Types of Colors (Primary, Secondary, Tertiary), demonstration and assignment
10. Drawing different mannequin poses

Semester-I	**Paper-X**
Course Code: BSC-AN 110 P	**Title of the Course: Programming Language**
Credits: 1.5	**Total Practical's: 45 Hrs**

Course Outcomes (Cos)

1. Solve problems using the functional paradigm.
2. Solve problems using the object-oriented paradigm.
3. Solve problems using the logic programming paradigm.

Practical List:

1. Write a Program which take an input mark obtain in 4 subject and print marks obtain in 4 Subject and percentage (in float) also print student is pass or fail (student is fail if he/she Obtain less than 35 marks in any of four papers).
2. Write a C program find the Area and Perimeter and Square and Rectangle.
3. Write a C program find the find max, Among 3 integer numbers. And also print square of the maximum number.
4. Write a C program to check whether the number is prime or not (Write a function to check number is prime).
5. Write a C program to print GCD of two integers (Write a function to find GCD).
6. Write a C program to print addition of Array elements. (Number of array element will be 5 and take the array element from user)
7. Write a C program to find an element in array. (Number of array element will be 5 and take the array element from user)
8. Write a C program to calculate n! Factorial.
9. Write a C program to read two strings and explain string library function.
   1)strlen ()
   2)strcyp ()
   3)strcat ()
   4)strcmp ()
10. Write a C program to which contain function to obtain first 25 number of a Fibonacci series.

Semester-I	**Paper-XI**
Course Code: BSC-AN 111 P	**Title of the Course: 3D Visualization-I**
Credits: 1.5	**Total Practical's: 45 Hrs**

Course Outcomes (Cos)

1. This course introduces students to all the major features of Maya.
2. Introduction, Modelling, Texturing Rendering and popular workflow.
3. Concepts are quickly reviewed and explained and then demonstrated using Maya.

Practical's List:

1. Basic Modeling concept: Furniture Door Windows Gate, Household Appliances

   i) Modeling Concept and Primitives and Modifier Explain Editable Polygon and its parameters.
   ii) Introduction of Spline Modeling
   iii) Import & Export File Management
   iv) Project Setting
   v) Introduction Material Editor
   vi) Introduction to Render Settings and Renderers

2. Create an Interior scene: Living, Kitchen and Bedroom

3. Texture the Interior scene with Various Arnold Shaders

4 Render the Interior scenes with Arnold Render setup use different types of Arnold Lights

5. Create a 3D Concept car with Car interior, Wheels and front, rear Lights

6. Texture the Car with Car Paint in Arnold Shaders and other Arnold preset as per requirement

7. Render the scene with Image based lighting using HDRI in Arnold, use proper lights for Head Light and Tail light, use volumetric light and fog effect to render a night scene

8. Create an Exterior scene for Architectural Visualization using proper plans, built a 4-storey building draw floor plans Extrude walls using splines, create proper environment, use vegetation's, Compound walls and gates, fencing, Put Alpha Images of Vehicles and humans if required

9. Texture all the models in Exterior scene using Arnold Shaders included Glass, Metal, Plastic, Rubber, Mirror and other qualities, UV unwrap as per requirement,

10. Render output in Image and Video Format:

    I)Render a Perspective view for Exterior scene using various Arnold Lights e.g., Sky Dome HDRI, Photometric light, Mesh Light and others as per requirement

    II)Create an Architectural Walkthrough in Video Forma

Semester-I	**Paper-XII**
Course Code: BSC-AN 112 P	**Title of the Course: Digital Graphics-I**
Credits: 1.5	**Total Practical's: 45 Hrs**

Course Outcomes (Cos)

1. Understand and apply the basic principles, techniques, and algorithms for generating and interacting with simple graphical objects on a display screen.
2. Gain awareness of common computer graphics software.

Practical list:

1. Adding and removing elements from background

2. Create any product. (Biscuit Cover, Chocolate Cover, Cream Cover, Kurkure Cover, lays Cover, etc.)

3. Converting black and white photo to Color

4. Removing scratches and restoring old photos

5. Coloring Cartoon/Comic Character

6. Coloring Comic Page/Pages

7. Photo Manipulation

8. Create Typographical Text

9. Create any 3D Modeling with Adobe Photoshop

10. Digital Painting

11. Matt Painting

SEM II

Semester-II	**Paper-I**
Course Code: BSC-AN 201 T	**Title of the Course: Basics of Animation-II**
Credits: 2	**Total Lectures: 30 Hrs**

Course Outcomes (Cos)

1. Developing concepts, storyboarding and production of several 2-dimensional animations will be accomplished.

Detailed Syllabus:

Unit I: Development of Characters **(06 Lectures)**

1. Case Studies of famous animation characters.

E.g., Oswald Rabbit, Tom and Jerry, Beauty and the Beast.

Unit II: Use of other art forms in Animation **(04 Lectures)**

1. Acting: Expression, Gesture
2. Architecture: Lighting, Texture
3. Sculpture: 3D Visualization, Posing
4. Music: Culture, Expressions

Unit III: Developing Animation Storyboard **(06 Lectures)**

1. Shot, Scene, Sequence
2. Types of shots and Camera angles

Unit IV: Anatomy & Body Language **(06 Lectures)**

1. Character Anatomy

   E.g., Hunchback, Beast...
2. Animal Anatomy - Goofy, Donald duck, Dumbo

Unit V: Developing the characters with computer animation. **(05 Lectures)**

1. Character anatomy (Human)
   E.g.: Moana, Tinker bell, woody etc...

2. Animal anatomy
   E.g.: Sid (Ice age), Panda, Dragon….

Unit VI: Techniques used in Animation short films (03 Lectures)

1. Discussion about award winning animation short films

Unit VII: Software's available for digital animation (02 Lectures)

1. 2D Animation
   -free and paid
2. 3D Animation
   -free and paid

Unit VIII: Hardware for animation (08 Lectures)

1. 2D Animation
2. Animation table, disc, peg bar, etc.
3. Digital animation
4. Computer, Graphic tables, Render farms, 3D Scanners

Suggested Readings:

Reference Books:

1. The Complete Animation course by Chris Patmore, Barons Educational Series (New York)
2. Anatomy of the Artist – Thompson & Thompson

Semester-II	**Paper-II**
Course Code: BSC-AN 202 T	**Title of the Course: Digital Filmmaking**
Credits: 2	**Total Lectures: 30 Hrs**

Course Outcomes (Cos)

1. Video Post-production is a linear process of film making.
2. Video Post-production include Picture editing, Sound effects editing, Music composition, Visual effects, Sound mixing and Color correction.
3. There are three processes of film making: Video Pre-production, Video Production and Video Post-production.
4. Video Post-production is the last stage of film making process.
5. Video Post-production process is started when shooting ends.
6. Video Post-Production Process follows the Video production phases.

Detailed Syllabus:

Unit I: Development (05 Lectures)

1. Before a film can get started, it needs to go through the "development" phase. This phase includes the creation, writing, organizing and planning of a film project. The budget must be set, cast goes through auditions, the location is decided, and multiple scripts are written. Many times, writers and directors create storyboards to entice producers to finance the film.

Unit II: Pre-Production (05 Lectures)

1. Once a film or digital media has gotten out of development, it is not quite time to start filming. Although that day is getting ever closer, there first needs to be a pre-production phase. While cameras are not yet rolling, pre-production can be just as intense as the filming itself.

Unit III: Production (05 Lectures)

2. Finally, the film is ready roll. Production is the quickest, and sometimes the shortest portion of filmmaking and digital media production. How long it takes to film depends on variables like the number of locations, the length of the film, and if any key members, such as leads, are off set for any portion of the filming.

Unit III: Cinematography Lightening Technique, Sound (10 Lectures)

1. Introduction to Video Camera
2. Camera and its Function
3. Camera Angles and Shots

4. Composition
5. Video Lights, Lightening Techniques
6. Sound

Unit IV: Post-Production (10 Lectures)

If someone saw a rough cut of a special effects-heavy blockbuster with no post-production additions, they would not be all that excited. The audience would be confused about why it looks so weird, without music or effects. Post-production is when the footage is edited, visual effects are added, music is composed, and titles are finalized.

Unit V: Distribution (05 Lectures)

With so many different mediums, such as movie theatres, television, home video, digital media and streaming, there are various distribution possibilities. What kind of distribution a film gets can depend on its quality and the pull of the filmmaker or studio?

Suggested Readings:

Reference Books:

1. Digital Filmmaking: The Changing Art and Craft of Making Motion Pictures

Semester-II	**Paper-III**
Course Code: BSC-AN 203 T	**Title of the Course: Digital Graphics-II**
Credits: 2	**Total Lectures: 30 Hrs**

Course Outcomes (Cos)

1. Have a proficiency in a broad range of design skills pertaining to publication design
2. Have a basic understanding of typography, color, layout, tables, images, graphics, styles and interactive elements.
3. Be able to navigate Adobe Workspace, Set up a document, and work with pages.
4. Understand how to work with frames, importing & linking graphics
5. Be able to import and edit text, work with typography and style sheets
6. Efficiently use color, transparencies, and tables
7. Have an understanding of output, exporting and packaging.

Detailed Syllabus:

Unit I: INTRODUCTION **(12 Lectures)**

1. Interface Introduction to Adobe Illustrator
2. Panels & Workspaces in Adobe Illustrator
3. Art boards in Adobe Illustrator
4. Vector basics / Selection & Direct selection tool
5. Fill & Stroke effects in Adobe Illustrator
6. Using Color / Swatches / Pantone's / Gradients & more
7. Handy Tips / Things to know for beginners

Unit II: ESSENTIAL PRACTISE **(10 Lectures)**

1. Creating shape vectors
2. Grouped vectors & Compounding vector shapes
3. Drawing with the Pen tool / Brush tool / Pencil tool & more
4. The Blob brush tool & Eraser tool
5. Type tools in Adobe Illustrator

Unit III: CREATE A PROJECT **(06 Lectures)**

1. Setting up a document / Placing in a drawing / Sketch
2. Image trace tool for sketches in Adobe Illustrator

Unit IV: Drawing **(08 Lectures)**

1. Tracing a hand drawn sketch & converting to vector artwork
2. Compounding vector shapes & strokes / Pathfinder Tool

Unit V: Coloring & Text **(02 Lectures)**

1. Coloring a vector drawing in Adobe Illustrator
2. Adding type to a poster design in Adobe Illustrator

Unit VI: Finishing & Exporting **(02 Lectures)**

2. Exporting ready for print in Adobe Illustrator

Suggested Readings:

Reference Books:

1)The complete beginners guide to Adobe Illustrator.

Semester-II	**Paper-IV**
Course Code: BSC-AN 204 T	**Title of the Course: Programming Language-II**
Credits: 2	**Total Lectures: 30 Hrs**

Course Outcomes (Cos)

1. Solve problems using the functional paradigm.
2. Solve problems using the object-oriented paradigm.
3. Solve problems using the logic programming paradigm.

Detailed Syllabus:

Unit I: An Introduction to C# (08 Lectures)

1. What is C#? Why uses C#
2. What is the CLR?
3. The FCL
4. Primitive Types
5. Namespaces
6. Statements and Expressions
7. Operators
8. Variables
9. Data Types
10. Type Casting
11. User Input

Unit II: Classes and Objects (06 Lectures)

1. Reference Types
2. Object Oriented Programming - what are classes and objects - class members/fields, constructors
3. Inheritance
4. Access Modifiers
5. Abstract Classes
6. Virtual Members
7. Math Class
8. String Class
9. Static Classes
10. Sealed Classes
11. Partial Classes

Unit III: C# - Types (04 Lectures)

1. Reference Types

2. Value Types
3. The struct
4. Testing Reference Types
5. Testing Value Types
6. Passing Parameters
7. Strings
8. Boxing
9. The enum
10. Defining Types
11. Interfaces
12. Arrays
13. Assemblies

Unit IV: C# - Events, Properties, and Methods **(06 Lectures)**

1. Methods - method parameters
2. Method Overloading
3. Fields
4. Properties
5. Events
6. Events - Delegates
7. Events - Subscribing
8. Events - Publishing
9. Indexers
10. Operator Overloading
11. Conversion Operators
12. Polymorphism and Overriding Methods

Unit V: C# - Flow Control and Exceptions **(04 Lectures)**

1. Branching
2. Switching
3. Looping
4. Using for each
5. Jumping
6. Returning and Yielding
7. Throwing Exceptions
8. Built-in Exceptions
9. Handling Exceptions
10. Chaining Catch Blocks
11. Finally
12. Re-throwing Exceptions
13. Custom Exceptions

Unit VI: C# and the CLR **(06 Lectures)**

1. Garbage Collection
2. Threads
3. A sync
4. Parallel
5. Reflection

6. Attributes
7. Custom Attributes
8. COM Interop
9. PInvoke

Unit VII: C# and Generics **(06 Lectures)**

1. Why Generics?
2. Building Collections Without Generics
3. Generic Collections
4. Generic Parameters
5. Generic Constraints
6. Generic Methods
7. The default Keyword
8. Generic Interfaces
9. Generic Delegates
10. Variance

Suggested Readings:

Reference Books:

1. C# in Depth by Jon Skeet
2. Learn C# in One Day and Learn It Well: C# for Beginners with Hands-On Project by Jamie Chan
3. The C# Programming Yellow Book: Learn to Program in C# from First Principles by Rob S. Miles

Semester-II	**Paper-V**
Course Code: BSC-AN 205 T	**Title of the Course: 3D Visualization-II**
Credits: 2	**Total Lectures: 30 Hrs**

Course Outcomes (Cos)

1)During the term of the course, students will learn to work within virtual 3-D space and build volumetric objects including: vertices, splines, polygons, primitive shapes and Sub Patch geometry.

2) Students will use these tools to build complex objects then learn the basic 3-D rendering tools and techniques including: surface channels, procedural textures, image mapping, light types and settings, camera settings and use, as well as a variety of rendering options, including ray-tracing. Students will also learn the importance of file backup and management.

Detailed Syllabus:

Unit I: Interface of Maya **(08 Lectures)**

1. Maya Viewport and Menu bar
2. Maya Shelfs, Command panel,
3. Maya Attribute editor, Channel Box/ Layer editor
4. Workspace, Outliner, Animation Timeline, Tool editor
5. Hyper shade, Render settings

Unit II: Inorganic Modeling **(04 Lectures)**

1. Understanding Polygon Geometry
2. Polygon Vertices, Polygon Edges, Polygon Faces,
3. Working with Smooth Polygons
4. Modeling with Polygons, Using Booleans,
5. Cleaning Topology Creating Your Own Polygons,
6. Multi-Cut Tool, Combining and Merging Geometry,
7. Bridge Polygon, Mirror Cut
8. Architectural Modeling Interior/ Exterior
9. Lofting Surfaces, Attaching Surfaces
10. Vehicle (CAR) Modeling using patch or edge extrusion method

Unit III: Character Modeling **(10 Lectures)**

1. Model a Cartoon character using Box Modeling or Patch modelling method
2. Image plane setup
3. Human Face blocking and Modeling
4. Torso Blocking and Modeling

5. Hand and Foot Blocking and Modeling

Unit IV: Hyper shade in Maya **(06 Lectures)**

1. Interface of Hyper shade in Maya
2. Various types of Shaders in Maya
3. Node Network parameters
4. Bump Maps, Normal Maps,
5. Creating Normal Maps, Applying Normal Maps
6. UV Coordinates
7. Apply Texture on Cartoon Character

Unit V: Maya Lighting and Rendering **(05 Lectures)**

1. Introduction Maya Standard Light and Renderer
2. Use of different types of lights in Maya
3. Three Point light
4. Maya Light Environment, effects and exposure controls,
5. Maya standard render setup
6. Maya basic Render output setting to save Render Image

Unit VI: Maya Deformers and Facial Expressions **(07 Lectures)**

1. Working with Deformers,
2. Shrink Wrapping Geometry
3. Using Textures to Deform Objects
4. Facial Expressions using Blend Shapes: Happy |Sad | Anger |shocked
5. Vowels A E I O U using Blend Shapes,
6. Lip-sync with dialogue

Suggested Readings:

Reference Book

Mastering Autodesk Maya 2015, Author - Todd Palmar

Semester-II	**Paper-VI**
Course Code: BSC-AN 206 T	**Title of the Course: Stop motion Animation**
Credits: 2	**Total Lectures: 30 Hrs**

Course Outcomes (Cos)

1)Intermediate course for traditional, digital and cut-out animation.

2)This course provides students the fundamental skills to produce traditional style animation as well as puppet animation and the knowledge of the principles of animation to be built upon in subsequent courses leading up to the Portfolio course

Detailed Syllabus:

Unit 1: Introduction **(03 Lectures)**

1. What is Stop motion?
2. Nature and Caricature

Unit 2: Getting equipped **(03 Lectures)**

1. What do you need?
2. A camera
3. Lenses
4. Animation software/frame grabbers
5. Tripods
6. Lighting the animator's toolkit
7. Editing/sound

Unit 3: Getting animated **(04 Lectures)**

1. Animating familiar objects as a first approach
2. Setting up for the first time
3. Notes on movement
4. Timing: single frame or double frame?
5. Squash and stretch
6. The dope sheet/X-sheet
7. Planning

Unit 4: Developing your story **(04 Lectures)**

1. Keep it simple –
2. Idea – script – treatment
3. Planning your shots – basic film grammar/composition of shots
4. The storyboard
5. Editing – Animatics and story reels

Unit 5: Armatures **(04 Lectures)**

1. Coat-hangers for armatures – making your own model
2. Character design
3. Working with modelling clays
4. Making your own puppet
5. Simple wire and plasticize puppet
6. Durable clothed puppet

Unit 6: Mold making **(02 Lectures)**

1. Model makers – the professional
2. The Marquette
3. Ball-and-socket armature
4. Mold making – hard and soft molds
5. Casting
6. Coloring
7. Costumes/dressing
8. Model-making master class – Scary Cat Studio and the
9. Duracell bunny

Unit 7: Making pro **(03 Lectures)**

1. Four walls and a sky – sets and props
2. Research the look
3. Design and building of sets
4. Interior sets
5. Exterior sets
6. Forced perspective
7. Making pro
8. Rigging

Unit 8: Sound **(02 Lectures)**

1. Sound advice – the voice track
2. Pre-production

3. Recording dialog
4. Sound breakdown
5. lip sync
6. Music and effects copyright

Unit 9: Walking and running **(03 Lectures)**

1. The mechanics of movement
2. Studies from observation
3. Posing the model
4. Timing
5. Weight
6. Anticipation, action and reaction
7. Walking and running
8. The illusion of speed
9. Animal and bird movement

Unit 10: Animation master class **(04 Lectures)**

1. The model
2. On what creates a character
3. First position
4. The extreme downward position
5. On Vinton' beginning the upward move
6. Slowing down at the top of the move
7. Settling into the final position

Unit 11: Character animation **(02 Lectures)**

1. The performance
2. Character animation
3. Comedy and comic timing
4. Subtle character animation

Unit 12: The production process **(02 Lectures)**

1. lighting
2. Health and safety issues
3. Setting up the camera
4. Shooting with a rig
5. Special effects

Unit 13: Post-production **(02 Lectures)**

1. Timecode
2. The picture edit
3. Sound
4. Titles and credits
5. Exporting your final film

Unit 14: Getting the job – the business of animation **(02 Lectures)**

1. Know where you stand
2. Different work, different studios
3. Commercials
4. Series

Reference Books

1. **The Advanced Art of Stop-Motion Animation by Ken Priebe**

Semester-II	**Paper-VII**
Course Code: BSC-AN 207 T	**Title of the Course: 2D Animation**
Credits: 2	**Total Lectures: 30 Hrs**

Course Outcomes (Cos)

1. 2D Animation I is an intermediate course for traditional, digital and cut-out animation.
2. This course provides students the fundamental skills to produce traditional style animation as well as puppet animation and the knowledge of the principles of animation to be built upon in subsequent courses leading up to the Portfolio course.
3. Students can also apply skills learned in this class in other areas including motion graphics, stop motion and basic traditional animation.

Detailed Syllabus:

Unit I: Introduction to the Adobe Animate interface (04 Lectures)

1. Tool Panel
2. Managing windows and Panel
3. Creating custom workspace Layouts
4. Setting stage dimensions
5. Working with panels
6. Editing frames and layers
7. Layers & Views.

Unit II: Introduction to drawing and drawing tools in Adobe Animate (04 Lectures)

1. Geometric Shape Tools
2. Drawing Tools
3. Using Fill and Stroke Controls

Unit III: Shaping Objects –Shapes, Drawing & Modifying Shapes (03 Lectures)

1. Designing and Aligning Elements
2. Simplifying snapping setting
3. Design Panels
4. Selection with Objects
5. Working & Editing Objects
6. Transforming Objects

Unit IV: Animation -Principles, Frame by frame animation, tween, masks (04 Lectures)

1. Basic Method of 2D Animation
2. Frame by Frame Animation
3. Using Tweens for Animation
4. Using Mask for Animation

Unit V: Bitmap Images & Sounds (04 Lectures)

1. Defining Vectors and Bitmaps
2. Identifying sound File Import and Export Format
3. Editing Audio in Animate

Unit VI: Building a Movie- Symbol, Libraries, Structure & Exporting Movie (10 Lectures)

1. Understanding the Document Library.
2. Editing Symbols.
3. Modifying Instance Properties.
4. Learning Libraries
5. Exporting Movie

Unit VII: Introduction to Adobe Character Animator (02 Lectures)

1. Tools
2. Layout
3. Difference Between Key frame and Performance Capture

Unit VIII: Recording and editing performances (02 Lectures)

1. Recording and Editing
2. Handles, sticks, and pins
3. Rigging a full body/character
4. Workflow with layered AI and PSD files

Unit IX: Animating by Character Animator (04 Lectures)

1. Adding triggers and behaviors
2. Cycle layers and frame by frame
3. Physics and Gravity
4. Exporting

Reference Books

1. Adobe Animate Classroom in a Book- Russell Chun
2. Timing for Animation - Harold Whitaker
3. A Reader in Animation Studies-- Jayne Pilling

Links:

1. https://en.wikipedia.org/?title=2D_Animation&redirect=nohttp://www.colormatters.com/color-and-design/basic-color-theory
2. https://en.wikipedia.org/wiki/Computer_animationhttp://www.usability.gov/what-and-why/visual-design.html
3. https://en.wikipedia.org/wiki/Character_animation

Semester-II	**Paper-VIII**
Course Code: BSC-AN 208 T	**Title of the Course: Typography**
Credits: 2	**Total Lectures: 30 Hrs**

Course Outcomes (Cos)

1. Be able to import and edit text, work with typography and style sheets

2. Be able to create a print-ready document.

Detailed Syllabus:

Unit I: Introduction **(02 Lectures)**

1. The Evolution of Typography
2. From the origins of writing to Gutenberg's invention of
3. Movable type
4. Typography from Gutenberg to the nineteenth century
5. The nineteenth century and the Industrial Revolution
6. Typography in the twentieth century
7. A new century and millennium begin

Unit II: Anatomy of Typography **(02 Lectures)**

1. The Anatomy of Typography
2. Letterforms analyzed
3. The typographic font
4. Historical classification of typefaces
5. Typographic measurement
6. The type family

Unit III: Legibility **(04 Lectures)**

1. Basic principles of legibility
2. Legibility and digital typography
3. Typographic details

Unit IV: Proportion **(02 Lectures)**

1. The Typographic Grid
2. Background

3. Structure and space
4. Proportion
5. The square
6. Single column grids
7. Multicolumn grids
8. Modular grids
9. Improvisational structures

Unit IV: Syntax and Communication **(06 Lectures)**

1. Typographic syntax
2. Typographic space
3. Visual hierarchy
4. ABA form

Unit VI: Typographic Message **(04 Lectures)**

1. The Typographic Message
2. A multidimensional language
3. Verbal/visual equations
4. Function and expression

Unit VII: Evolution of Typographic Technology **(02 Lectures)**

1. Hand composition
2. Machine composition
3. Phototypesetting
4. Digital typesetting
5. Screen-based typography

Unit VIII: Typography on Screen **(02 Lectures)**

1. Rendering type on screen
2. Reading on screen
3. Selecting typefaces
4. Legibility factors for on-screen typography
5. Web design technology
6. Structuring web pages

Unit IX: Grid Analysis **(06 Lectures)**

1. Letter/digit configurations
2. Urban letterform studies
3. Flowering typography

4. Inventing sign systems
5. Comparative relationships: type and image
6. Sequential typographic forms in space
7. Typography and image transformations
8. Unity of form and communication
9. Experimental compositions with found typography
10. Visual organization and grid structures
11. New York Times grid analysis
12. Environmental grids
13. Blending Latin and non-Latin typographic forms
14. Type and image in the third dimension

Unit X: Typographic Design Process **(06 Lectures)**

1. Typographic Design Process
2. A traditional model
3. Exploring typographic permutations
4. Exploring typographic transformation

Unit XI: Type Specimens **(02 Lectures)**

1. Old Style
2. Garamond
3. Additional Old-Style fonts
4. Sans's serif
5. Franklin Gothic
6. Universe
7. Meta
8. Futura
9. Additional sans serif fonts
10. Transitional
11. Baskerville
12. Additional transitional fonts
13. Modern
14. Bauer Bodoni
15. Additional Modern fonts
16. Egyptian
17. Serif
18. Additional Egyptian font
19. Selected Decorative fonts

Unit XII: Case Studies **(02 Lectures)**

1. Typography in Time and Motion
2. Background
3. Using type in time-based media
4. How type changes and moves
5. Legibility factors
6. Expression

Reference Books:

1. **The Anatomy of Type: A Graphic Guide to 100 Typefaces**
2. **The Elements Of Typographic Style**
3. **Typographic Design: Form and Communication**

Semester-II	**Paper-IX**
Course Code: BSC-AN 209 P	**Title of the Course: Stop Motion & Programming Language-II**
Credits: 1.5	**Total Practical's: 45 Hrs**

Course Outcomes (Cos)

1) Intermediate course for traditional, digital and cut-out animation.

2) Students can also apply skills learned in this class in other areas including motion graphics, stop motion and basic traditional animation.

3) Solve problems using the functional paradigm.

4) Solve problems using the object-oriented paradigm.

5) Solve problems using the logic programming paradigm

Practical List:

Stop Motion

1. Create A Stop Motion Animation for An Origami Paper Craft.
2. Create A Stop Motion Animation for A Clay or Paper Logo.
3. Create a Clay Background for subject "Underwater"
4. Create A Stop Motion Animation Using "Cadbury Gems"
5. Create your Own "Stop Motion Project" with the topic of your choice.

Programming Language-II

1. Write a program to Create an Animated Welcome Screen using C#.
2. Write a program to Create a Calculator using C# application to add, subtract, divide, multiply the numbers.
3. Write a program to send html Email from C#.
4. Write a program to Create Web Browser in C#.
5. Write a C# Sharp program to extract the Date property and display the Date Time value in the formatted output.

Semester-II	**Paper-X**
Course Code: BSC-AN 210 P	**Title of the Course: 2D Animation**
Credits: 1.5	**Total Practical's: 45 Hrs**

Course Outcomes (Cos)

1)2D Animation I is an intermediate course for traditional, digital and cut-out animation.

2)This course provides students the fundamental skills to produce traditional style animation as well as puppet animation and the knowledge of the principles of animation to be built upon in subsequent courses leading up to the Portfolio course.

3)Students can also apply skills learned in this class in other areas including motion graphics, stop motion and basic traditional animation.

Practical's List:

Adobe Animate CC

1. Create Bouncing Ball animation using Animation Principal.
2. Character Walk cycle (Basic and Advance).
3. Car Animation.
4. Animating Rocket using Symbols and Animation principle.
5. Create a Webpage.

Adobe Character Animator

6. Create a Motion Capture using lip sync
7. Creating an Illustrator Puppet
8. Creating Walk cycle using Adobe Character Animator.
9. Character Rigging
10. Studying Editing and Recording

Semester-II	**Paper-XI**
Course Code: BSC-AN 211 P	**Title of the Course: 3D Visualization-II**
Credits: 1.5	**Total Practical's: 45 Hrs**

Course Outcomes (Cos)

1)During the term of the course, students will learn to work within virtual 3-D space and build volumetric objects including: vertices, splines, polygons, primitive shapes and Sub Patch geometry.

Practical list:

1. Create Basic 3D Model Chair, Table, couch

2. Create a 3D House using proper plan and references

3. Model Exterior of 4 Storey Building with proper floor plan and environment

4. Model 3D Car using reference Images

5. Render the Exterior Scene using standard lights and render settings

6. Create a Background scene including river water and vegetation

7. Create a 3D Village scene and render with environment and effects,
   Image based lighting

8. Create a 3D Cartoon Character with proper drapery
   and Texture: any game model

9 Render a Turn Table of given Cartoon character

10 Create Facial Expressions using Blend shapes: Vowels and Expressions

Semester-II	**Paper-XII**
Course Code: BSC-AN 212 P	**Title of the Course: Digital Graphics-II**
Credits: 1.5	**Total Practical's: 45 Hrs**

Course Outcomes (Cos)

1. Be able to navigate Adobe Workspace, Set up a document, and work with pages.
2. Understand how to work with frames, importing & linking graphics
3. Be able to import and edit text, work with typography and style sheets

Practical's List:

1. Shapes Composition
2. Create tattoo Designs
3. Create own text A to Z
4. Logo Design
5. Branding Visiting Card, Letter head, Envelop Design
6. Brochure Design
7. Advertise Design
8. Product modeling illustration
9. Car Modeling
10. Character Design