Rayat Shikshan Sanstha's

Yashavantrao Chavan Institute of Science,

Satara

SYLLABUS

FOR

B.Sc. Animation Science (Entire)

Second Year SEMESTER III / IV

With effect from JUNE 2019

Year 2019-20 onwards

Syllabus for Bachelor of Science Part II: Animation Science (Entire)

B. Sc. II SEMESTER– III									
Sr. No.	SUBJECT TITLE	PAPER NO AND TITEL	TEACHING SCHEME						
			Theory			Practical			
			No. of lectures	Hours	Credits	Subject	No. of lectures	Hours	Credits
1	BAST-301	Cinematography	3	2.4	2	BASP-308	8	6.4	4
2	BAST-302	Digital Animation –I	3	2.4	2				
3	BAST-303	Digital Animation –II	3	2.4	2	BASP-309	8	6.4	4
4	BAST-304	Video Editing	3	2.4	2				
5	BAST-305	Introduction of 3D – I (mudbox)	3	2.4	2	BASP-310	8	6.4	4
6	BAST-306	Software Analysis and Design	3	2.4	2				
7	AECC	Environment	3	2.4	2				
	Total of SEM I		21	16.8	14		24	19.2	12

B. Sc. II SEMESTER– IV									
Sr. No.	SUBJECT TITLE	PAPER NO AND TITEL	TEACHING SCHEME						
			Theory			Practical			
			No. of lectures	Hours	Credits	Subject	No. of lectures	Hours	Credits
1	BAST-401	3D MAX-I	3	2.4	2	BASP-408	8	6.4	4
2	BAST-402	3D MAX-II	3	2.4	2				
3	BAST-403	3D Maya - I	3	2.4	2	BASP-409	8	6.4	4
4	BAST-404	VFX-I	3	2.4	2				
5	BAST-405	IPR and Cyber Security	3	2.4	2	BASP-410	8	6.4	4
6	BAST-406	Game design -I	3	2.4	2				
7	AECC	Environment	3	2.4	2				
	Total of SEM II		21	16.8	14		24	19.2	12

B. Sc. II EVALUATION STRUCTURE SEMESTER– III (Duration – 6 Months)

Subject	Paper	ESE	Internal Exam		Subject	Practical-I		Submission	
			CCE-I	CCE-II (Online Test)		Exam	Journal	Case study/ Educational Tour/ Seminar	Day to day Performance
BAST--301	Cinematography	30	5	5	BASP--308 ANIMATION LAB-I	50	10	5	5
BAST--302	Digital Animation – I (ToonBoom)	30	5	5					
BAST--303	Digital Animation-II (Flash)	30	5	5	BASP--309 ANIMATION LAB-II	50	10	5	5
BAST--404	Video Editing (Adobe premier pro cc, Edius)	30	5	5					
BAST--405	Introduction of 3D - I (mudbox)	30	5	5	BASP--310 ANIMATION LAB-III	50	10	5	5
BAST--406	Software Analysis and Design	30	5	5					
AECC 3	Environment Science	30	10	10					
Total of SEM III	TOTAL	210	40	40		150	30	15	15
	GRAND TOTAL	**500**							

SEMESTER– IV (Duration – 6 Months)

Subject	Paper	ESE	Internal Exam		Subject	Practical-I		Submission	
			CCE-I	CCE-II (Online Test)		Exam	Journal	Case study/ Educational Tour/ Seminar	Day to day Performance
BAST--401	3D MAX-I	30	5	5	BASP--408 ANIMATION LAB-I	50	10	5	5
BAST--402	3D MAX-II	30	5	5					
BAST--403	3D Maya - I	30	5	5	BASP--409 ANIMATION LAB-II	50	10	5	5
BAST--404	V.F.X-I (After effects)	30	5	5					
BAST--405	IPR and Cyber Security	30	5	5	BASP--410 ANIMATION LAB-III	50	10	5	5
BAST--406	Game design -I	30	5	5					
AECC 3	Environment Science	30	10	10					
Total of SEM IV	TOTAL	210	40	40		150	30	15	15
	GRAND TOTAL	**500**							
TOTAL OF MARKS FOR SEMESTER III+ IV: 1000									

Head
Dept of Animation Science (Entire)

B.Sc. Part II: Animation Science (Entire)

Theory: BAST - 301: CINEMATOGRAPHY (2 Credits) 45 lectures

Learning Objectives:-

1. To obtain a Cinematographer position
2. To contribute to the success of the company.
3. Functional knowledge of photographic history and theory, the relationship of photography to the visual disciplines, and its influence on culture
4. An understanding of the industrial and commercial applications of photographic techniques.

Unit-I (Introduction to Visual Storytelling) (10)

Visual Storytelling , Photography, Exposure Times, Photography as Art , Images as Communication, The Power of the Image, Messages Hidden in Images, Communicating Your Message, The Frame, Aspect Ratio

Unit-II (A Technical Introduction to the Camera & Camera Placemen) (10)

How is an Image Created?, Camera Obscure, Creating a Permanent Photograph, Modern Camera Sensors, Creative Use of Exposure Time, Camera Components , Camera Functions, Exposing an Image, Exposure and Shutter Speed, Using Slow Shutter Speed on a Video Camera, Controlling Exposure ,Three Exposure Controls, Aperture Effects, Exposure and Aperture, The Sensor ,Adjusting Sensitivity, Noise, Camera Distance, Shot Types, Extreme Long Shot, Medium Long Shot, Medium Shot, Medium Close Up and Close Up, Extreme Close Up, Shot Size and Lenses, Over the Shoulder Shot, Two Shot, Camera Height, Eye Level Height, High Angle, Low Angle

Unit-III (The Len & Camera Movement) (12)

What is a Lens?, Lensless Photography, Convergence, Lens Speed, Field of View, Sharpness, Distortion, Guidelines for Choosing a Lens, The Main Functions of a Photographic Lens, Consumer Cameras
What Lens Do I Need?, Choosing a Lens, The Normal Lens, Field of View, LensTypes, Perspective and Depth, When Was the Camera Moved First?, Camera Movement Types, Motivated Camera Movement, The Panning Shot, The Tilt Shot, The Tracking Shot, The Circular Move, The Push-In Shot, The Pull-Out Shot, The Crane Shot, The Handheld Shot, The Steadicam Shot,

Unit-IV (Creative Lighting & Color) (13)

Three-Point Lighting, The Key Light, The Fill Light, The Back Light, Effective Use of Three-Point Lighting, Practical Lighting Applications, Lighting Analysis, Lighting the Face, Visual Intensity, Contrast and Affinity, Contrast in Color, Evaluating Color Contrast, Storytelling with Lighting, How Does Light HelpTell a Story?

What is Color?, The Relativity of Color, The Human Eye, After Images, Primary Colors, Complementary Colors, Color Interpretation, Shades of Red, Color Interpretation in Cinema, The Meaning of Color, Color in Images and Film, "Drive", Emotion and Color

Learning Outcomes:-

1) The ability to work in experimental and manipulative techniques, candid and contrived imagery, documentary photography, archival processing, and interpretive studies.
2) A familiarity with and command of materials, equipment, and library resources related to the study of photography.
3) The ability to work and study independently.
4) An understanding of visual forms and their aesthetic functions, and basic design principles, developing throughout the degree program, with attention to such areas as design, color, and lighting.

Reference Books:-

1) Cinematography - second edition - blain brown , (Unit I and III)
2) Digital Cinematography: Fundamentals, Tools, Techniques, and Workflows – David Stump, Asc (Unit II and III)
3) Cinematography Techniques: The Different Types of Shots in Film - By Timothy Heiderich (Unit IV)
4) The Filmmaker's Guide to Digital Imaging - blain brown , (Unit I and III)

BAST - 302 DIGITAL ANIMATION –I (ToonBoom Harmony) (2 Credits) 45 lectures

Learning Objectives:-

1. Identify key historical events that contributed to the development of the animation industry.
2. Analyze, assess, and identify animation principles and how to apply them when animating.
3. Assess and recommend different animation techniques based on style ,requirements and advantages.
4. Animating and Creating Motion Paths in ToonBoom.

Unit –I- Interface Highlights (10)

Introduction of Toonboom Harmony 16.0, **Project Creation**-Creating Scenes, Scene Settings, **User interface**-Menus, Toolbars, Views, Workspaces, Interface Navigation.

Layers and Columns- Adding Layers and Columns, Deleting, Renaming, Locking, Unlocking and navigating layers, Clone and Duplicate layers, Grouping and ungrouping the layers.

Timing- Scene Length, Exposure, Drawings, Scene Markers.

Unit –II- Drawing & Painting (12)

Drawing Tools, Drawing Optimization, Strokes Conversion, Colour Swatches, Palettes, Painting Drawings, Closing Gaps.Paperless Animation- Creating a Rough Animation, Paperless Animation Tools.

Scene Staging- Layer Position, Transform Tool, Advanced Animation Tools.

Unit –III- Digital Animation and Importing (13)

Pegs, Keyframes, Controls, Functions, Copying Motions, Velocity.

Importing - Importing Bitmap Images, Importing a Multi-Layer PSD, Importing Vector Files, Importing QuickTime Movies.

Camera Set-up and Animation- Adding a Camera, Positioning the Camera Frame, Animating the Camera.

Unit –IV- Effects and Exporting (10)

Character Rigging- Rig types, Models, Importing Sound and Lip-Sync, Stop-Motion Animation, Enhancing with Effects, Exporting and rendering project.

Learning Outcomes:-

Student will learn Digital Animation –I (ToonBoom) as follows:

1) Toonboom Studio 8.1 new features introduced.
2) Drawing and design in Toonboom
3) Importing and Inking in ToonBoom.
4) Traditional Digital Animation Vs New Advanced Features.

Reference Books:–

1.Complete Book of ToonBoom (Unit I and III)
2. User Guide- ToonBoom Harmony 16.0. (Unit II and III)
3. Animate to Harmony: The Independent Animator's Guide to Toon Boom 1st Edition (Unit III)

BASP-308: Animation Science Lab- IX Lectures-8 Credit-4

Learning Objectives:-

1. To obtain a Cinematographer position
2. Assess and recommend different animation techniques based on style ,requirements and advantages.
3. Functional knowledge of photographic history and theory, the relationship of photography to the Visual disciplines and its influence on culture.
4. An understanding of the industrial and commercial applications of photographic techniques.

Part-I

1. Different types of Camera mounts & heads.-(1)
2. Different types of camera movement. .-(1)
3. Camera lens - different types & properties of lenses. .-(1)
4. Differences between a Digital & Analogue image. Digital & Analogue Image formation theory. .-(2)
5. Different types of shots used in cinematography/ videographey . .-(1)
6. Color filters: Use of color filters in Cinematography. .-(1)
7. Different types of shooting formats and aspect ratio (RAW, 2k, 4k, JPEG etc). .-(1)
8. Color Correction, Principles of color correction. .-(2)
9. Basic use of lighting in Cinematography. Principles of different types of lights used in.-(2)
10. Use of light balancing and color conversion filters in Cinematography. Color temperature.-(1)
11. Different types of lighting. .-(1)
12. Shooting Assignment - Digital Cinematography.-(1)

Part-II

1) The Drawing View- Drawing Basic Objects/Scenes in Toon boom . (1)
2) Tracing character in ToonBoom using Shift and Trace. (1)
3) How To Make a Cartoon in ToonBoom. (1)
4) Creating In-between Key poses- Key Frames vs. Drawings. (1)
5) Animating Organic Objects (1)
6) Animating inorganic Objects ToonBoom. (1)
7) Frame-By-Frame Rough Animation. (1)
8) Animate Walk Cycles in ToonBoom. (1)
9) How to Import Sound and Add Lip-Sync in Harmony. (1)
10) Creating Effect in Toon boom. (1)
11) Rigging a Character Turnaround in Toon Boom Harmony(1)
12) Cut out puppet animation in ToonBoom. (1)
13) Motion Path animation in ToonBoom.
14) Making an animation movie in toon boom.
15) Rendering Some Animation Scenes.

Learning Outcomes:-

1) The ability to work in experimental and manipulative techniques, candid and contrived imagery, documentary photography, archival processing, and interpretive studies.
2) A familiarity with and command of materials, equipment, and library resources related to the study of photography.
3) Importing multimedia files and Lip Syncing.
4) Learning enhanced effects in ToonBoom.
5) An understanding of visual forms and their aesthetic functions, and basic design principles, developing throughout the degree program, with attention to such areas as design, color, and lighting.

Reference Books:-

1) Cinematography - second edition - blain brown
2) Digital Cinematography: Fundamentals, Tools, Techniques, and Workflows – David Stump, Asc
3) Cinematography Techniques: The Different Types of Shots in Film - By Timothy Heiderich
4) The Filmmaker's Guide to Digital Imaging - blain brown ,
5) Complete Book of ToonBoom
6) User Guide- ToonBoom Harmony 16.0.
7) Animate to Harmony: The Independent Animator's Guide to Toon Boom 1st Edition

BAST -303: DIGITAL ANIMATION –II (2 Credits) 45 lectures

Learning Objectives:

1. Computer Animation and Game Development graduates will have an understanding of critical and aesthetic issues in computer graphics and mixed-media.
2. They will know basic aesthetic principles and concepts, and the production process.
3. They will be effective written and oral communicators with the ability to function as effective members of collaborative multi-disciplinary teams in the production process.
4. They will be able to critically evaluate computer graphics and the mixed media.
5. They will have an appreciation for the professional code of ethics for the creative process.

Unit-I **(10)**

Introduction, About Animate ,Understanding the Workspace of Animate
Animate Document Setup ,Create Animation ,Publishing , Basic drawing

Unit-II **(13)**

Play with Text , Text Tool ,Transforming Text ,Skew, Break Apart and Color Text
Vertical Text, Rotate Text and Zoom Text ,Symbols and Interactivity
Graphic symbol ,Buttons symbol ,Action Script ,Movie clip symbol

Unit-III **(12)**

Special Effects ,Shape Tween , Mask ,Spotlight ,Motion Guides ,Motion Tween
Motion Presets ,Combine Animate Movies ,Add Scenes ,Load Movies ,

Unit-IV **(10)**

Play with Graphic, Brightness ,Tint ,Alpha ,Remove background ,Play with Sound
Add background music, Add sound effect ,Video ,Steps for importing video

Learning Outcomes:-

1. Flash software structure motivates to create 2d animation with best quality. Improve skill of drawing and sketching with color sense.
2. Flash cc is such powerful application that why it is important for Graphics sector.
3. Flash cc has one of many tools used to build models for the film, games, or broadcasting industries.
4. Student get knowledge of web development and software development through this software and syllabus.
5. The ability to design control systems that are user friendly, and intuitive to the end user, the animator

Reference Books:-

1. Adobe Flash Professional Bible cc 2015.(Unit-I)
2. Adobe Flash Manual help center.(Unit-I,II,IV)
3. Adobe Flash Professional the official Training classroom Workbook.(Unit-I,II,III,IV)

BAST -304: VIDEO EDITING (2 Credits) 45 lectures

Learning Objectives:-

1. Select video editing software and related tools from the Internet
2. Understand the fundamental concepts of digital video
3. Know how to perform video editing on a basic level
4. Be aware of copyright issues and laws

Unit –I- Workspace and workflows (10)

Working with Panels, Tools panel and Options panel, Creating projects, Importing footage into Premiere Pro, Importing still images, Importing digital audio, Capturing and digitizing footage, Working with timecode, Editing sequences and clips in Premiere Pro, Rendering and previewing sequences, Multi-camera editing workflow, Working with markers, Create and play clips, Trimming clips, Freeze and hold frames, Working with captions, Graphics, titles, and Motion Graphics templates.

Unit –II- Effects and transitions in Premiere Pro (14)

Fixed effects, Standard effects, Applying, removing, finding, and organizing effects, Viewing and adjusting effects and keyframes, Master Clip effects, Masking and tracking, Transition, Motion: position, scale, and rotate clips, Adjustment Layers, Color correction effects, Lighting Effects, Audio effects and transitions, The rolling shutter repair effect, Video effects and transitions, Blur and Sharpen effects, Channel effects, Color Correction effects, Distort effects, Noise & Grain effects, Perspective effects, Animation and keyframes in Premiere Pro, Editing audio in Premiere Pro, Compositing in Premiere Pro.

Unit –III- Edius (11)

Edius Layout, Timeline Window, Creating a Project, Importing Sources, Importing File, Managing Sources, Editing Operations, Transforming/Rotating Video, Trimming Clips, Markers, Sequences, Multicam Mode, Proxy Editing, 3D Editing, Checking Color

Unit –IV- Effects and Audio (10)

Effect Palette, Setting Effects, Camera Shake Correction, Stereoscopic Adjustment, Range-Restricted Effects/Multiple Filters, Transition, Changing Duration of Effect, Title Effect, Operation for Effects, Applying the Adjusted Effect to Another Clip, Preset, Quick Titler, Creating Text Object, Creating Text Object, Title Position Adjustment, Audio, Volume/Pan Adjustment, Normalization, Exporting in File Formats

Learning Outcomes:

Student will learn Video Editing (Adobe premier pro CC, Edius) as follows:

1. Describe what Adobe Premiere Pro is and how it can help you with your video making needs.
2. Demonstrate installing, setting up, and working with media in Adobe Premiere.
3. Demonstrate organizing content and creating sequences.
4. Demonstrate working with the source monitor.

Reference Books:-

1. Premiere_pro_reference.(Unit-I)
2. A Beginners Guide To Using Adobe Premiere Pro. .(Unit-I,II,IV)
3. EDIUS Pro 9 User Manual .(Unit-III)

BASP-309: Animation Science Lab- X Lectures-8 Credit-4

Learning Objectives:

1) Computer Animation and Game Development graduates will have an understanding of critical and aesthetic issues in computer graphics and mixed-media.
2) They will know basic aesthetic principles and concepts, and the production process.
3) Know how to perform video editing on a basic level
4) Be aware of copyright issues and laws

Part-I

1. Creating Basic object(1)
2. Drawing object and animate with shape (1)
3. Creating basic animation (bouncing Ball) (1)
4. Create and design model sheet with Effects (1)
5. Create and Grouping basic characters (1)
6. Rig Character with symbols (1)
7. Creating background (1)
8. Animate human walk cycle (1)
9. Animate animal walk cycle (1)
10. Rig Face expression (1)
11. Animate character with various angles (1)

Part-II

1. Importing / Capturing Clips. (1)
2. Basic Timeline Editing. (1)
3. Adding Effects. (1)
4. Color Corrections. (1)
5. Multicam Editing. (1)
6. Audio Editing. (1)
7. Exporting. (1)
8. Adding Markers. (1)
9. Adding Effects In Edius. (1)
10. Color Corrections In Edius. (1)
11. Multicam Editing In Edius. (1)
12. Audio Editing In Edius. (1)
13. Separate Audio and Video in Edius.

14. Use the Mix Track in Edius.
15. Exporting in Edius.

Learning Outcomes:-

6. Flash software structure motivates to create 2d animation with best quality. Improve skill of drawing and sketching with color sense.
7. Flash cc is such powerful application that why it is important for Graphics sector.
8. Flash cc has one of many tools used to build models for the film, games, or broadcasting industries.
9. Demonstrate working and editing in the Timeline.
10. Demonstrate advanced editing techniques in the Timeline.
11. Demonstrate working with motion in Premiere.

Reference Books:-

1. Adobe Flash Professional Bible cc 2015
2. Adobe Flash Manual help center.
3. Adobe Flash Professional the official Training classroom Workbook
4. A Beginners Guide To Using Adobe Premiere Pro.
5. EDIUS Pro 9 User Manual

BAST -305 : INTRODUCTION OF 3D – I (MUDBOX) (2 Credits) 45 lectures

Learning Objectives:-

1) Mudbox digital painting and digital sculpting software enables you to create production-ready 3D digital artwork.

2) Mudbox offers a high-performance environment and professional-quality tools to help you create highly realistic 3D characters, engaging environments, detailed props, and compelling concept designs in less time.

3) Mudbox have one of many tools used to build models for the film, games, or broadcasting industries.

4) Mudbox is accessible to both traditional and digital artists.

Unit-I (10)

Introduction of mud box, Sculpting Concepts, Comparing Traditional and Digital Sculpting Workspace ,Armatures ,Lighting, Anatomy sculptures, Proportion and measurements Form negative space and gesture, Expression and emotion in sculptures

Unit-II (12)

Interface Overview, A 3D Primer, Setting Up the Scene ,Sculpting a bell paper Understanding 3D space, Polygon basics, Resolutions ,UV Mapping, Digital Images

Unit-III (13)

Sculpting a portrait bust, Sculpting a Likeness, Sculpting neutral position Changing proportion ,Refine the shapes,

Unit-IV (10)

Sculpting a Figure, Anatomy Primer, Painting Sculptures ,Creating Displacement maps

Learning Outcomes:-

1. Mudbox is a professional digital sculpting and production-level texture painting program.
2. Mudbox has its functionality that works in much easier and better way for baking maps.
    i. Some baking settings can be saved automatically for reuse, allowing you to access all the options readily as you fixed them previously.
3. Autodesk Mudbox is a digital sculpting and texture painting software that allows artists to create highly detailed 3d. models with an intuitive user interface
4. Autodesk Mudbox is a digital sculpting and texture painting software that allows artists to create highly detailed 3d. models with an intuitive user interface Mudbox is accessible to both traditional and digital artists.

Reference Books:-

1) Mudbox Bible – by by Kelly L. Murdock .(Unit-I,II,,III,IV)
2) Mastering Autodesk 3ds Mudbox -by Jeffrey M. Harper .(Unit-I,II,,III,IV)
3) 3Ds Mudbox - by Boughen, Nicholas .(Unit-I)

BAST -306: SOFTWARE ANALYSIS AND DESIGN (2 Credits) 45 lectures

Learning Objectives:

1. This course introduces the concepts and methods required for the construction of large software intensive systems. It aims to develop a broad understanding of the discipline of software engineering.
2. It seeks to complement this with a detailed knowledge of techniques for the analysis and design of complex software intensive systems.
3. It aims to set these techniques in an appropriate engineering and management context.
4. It provides a brief account of associated professional and legal issues.

Unit-I Introduction to SDLC – **(10)**

What is System and its elements? What SDLC, Waterfall Model, Prototype model,

Spiral Model and RAD Model

Unit-II Fact Finding Techniques- **(13)**

Introduction to Fact finding techniques, Decision Tables and trees, Normalization and its types (1^{st}, 2nd, 3rd, 4th, 5th, and Boyce code normal forms), Introduction to Object oriented programming concepts.

Unit-III Unified Modeling Language- **(11)**

Introduction to UML and its types, Flow chart, ERD, DFD, Sequence diagrams

Deployment and Component diagrams , Software Design

Unit-IV Introduction to Testing- **(11)**

Introduction to Software testing, Testing Principles, Testing Process , Introduction to V-V Model, ,White Box, Black box Alpha and Beta testing, Introduction to Software Engineering,What is Software engineering?, Introduction to Software production process Re- Engineering, Project Management, System Security .

Learning Outcomes:

After completing the course attendees will be able to

1. understand the issues affecting the organisation, planning and control of software-based systems development;
2. complete the analysis and design of a small software intensive system;

read and understand the professional and technical literature on software engineering

Reference Book:

1. Software engineering – a practitioner's approach by Roger S. Pressman, MGH.(Unit-IV)
2. System Analysis , Design and introduction to Software Engineering by S. Parthasarathy and B.W.Khalkar .(Unit-I,II,,III,IV)
3. Software engineering by Shoomar, PHI 2. .(Unit-I,II,,III,IV)
4. System analysis and design by Award, TMH .(Unit-I,II,,III,IV)

BASP-310 :Animation Science Lab- XI Lectures-8 Credit-4

Learning Objectives:-

1) Mudbox digital painting and digital sculpting software enables you to create production-ready 3D digital artwork.

2) Mudbox offers a high-performance environment and professional-quality tools to help you create highly realistic 3D characters, engaging environments, detailed props, and compelling concept designs in less time.

3) It aims to set these techniques in an appropriate engineering and management context.

4) It provides a brief account of associated professional and legal issues.

Part-I

1) Creating Basic object (1)
2) Create props for character (1)
3) Basic walkthrough (1)
4) Creating environmental background (1)
5) Dynamic Tessellation (1)
6) Map Extraction **(1)**
7) Creating organic object (Human) **(1)**
8) Creating organic object (Animal) **(1)**
9) HEAD and FACE sculpting, detailing, and painting tutorial (1)
10) Creating organic object (Car) **(1)**
11) Preparing A Mesh For Multiple UV Tile Painting in Mudbox **(1)**

Part-II

1) Create a Algorithm and Flow chart on Addition of two Numbers. (1)
2) Create a Algorithm and Flow chart on Multiplication. (1)
3) Create Table using First and Second Normalization concept. (1)
4) Create Table using Third and Fourth Normalization concept. (1)
5) Draw the ERD with tables for Admission Process. (1)
6) Draw the ERD with tables for Library system. (1)
7) Draw the ERD with tables on any case study. (1)
8) Draw the DFD all stages for Admission Process. (1)
9) Draw the DFD all stages for College Payroll System. (1)
10) Draw the Sequence diagram for Registration Form. (1)

11) Draw the Sequence diagram on any case study. (1)

12) Draw the Component and Deployment diagram for College Website. (1)

13) Write down SDLC stages on any Project

14) Write down test cases for Login Form.

15) Write down test cases for Registration Form.

Learning Outcomes:-

1) Mudbox is a professional digital sculpting and production-level texture painting program.

2) Autodesk Mudbox is a digital sculpting and texture painting software that allows artists to create highly detailed 3d. models with an intuitive user interface

3) After completing the course attendees will be able to
   - understand the issues affecting the organisation, planning and control of software-based systems development;
   - -complete the analysis and design of a small software intensive system;

4) Autodesk Mudbox is a digital sculpting and texture painting software that allows artists to create highly detailed 3d. models with an intuitive user interface

Reference Books:-

1) Mudbox Bible – by by Kelly L. Murdock

2) Mastering Autodesk 3ds Mudbox -by Jeffrey M. Harper

3) 3Ds Mudbox - by Boughen, Nicholas

4) Software engineering by Shoomar, PHI 2.

5)System analysis and design by Award, TMH .

B. Sc. Part – II Animation (Entire)
Semester – IV

BAST -401: 3D MAX-I (2 Credits) 45 lectures

Learning Objectives:-

1. The primary objective of this course is to teach students the essentials of working in 3D using an array of features and tools.
2. This course teaches new users the basics of creating, embellishing, and animating 3D scenes.
3. After completing this course, student should be able to: Model objects using a variety of techniques⎫
4. Design and apply materials, Adjust basic lighting , Animate simple objects Build and animate simple, effective environments⎫

Unit-I (10)

Introduction of 3d Max, Transforming Object, Pivoting, Aligning And Snapping Exploring the types of Model, Working with Sub object, Introducing Modifiers, Drawing and Editing 2D Spines and Shapes, Editing Spine Editing Segments, Modeling with Polygon, Using Graphite Modeling tools

Unit-II (12)

Understanding Material Properties, Working With Slate Material Editor, Using the Standard Material, Working with Maps, Using Compound Material, Using the Shading Type, Material Modifiers, Mapping Modifiers, Using the Edit UVWs Interface

Unit-III (12)

Learning work with camera, Creating Camera Objects, Setting Camera Parameters, Understanding the basic of light, the light types Crating and Positioning Light Objects, Viewing a Scene From a Light, Altering Light Parameters.

Unit-IV (11)

Working with Render Parameters, Using the Render Types, Using Various types of Rendering Effects, Working with Mental ray, Using Mental ray Light and Shadow, Using Render Elevenths, Using State Sets Completing Post-Production with Video post Interface Adding Image layer events, Working With Range

Learning Outcomes:

1. After Completion of this course students will be able to develop 3D Interior or Exterior.
2. Create portfolios.
3. Create run cycles with character rigs.
4. Refine 3D character's walk cycle animation using the graph editor.

Note: New theory & practical's syllabus drafted by recent technologies & updated versions of software.

Reference Books:-

1) 3Ds Max Bible – by by Kelly L. Murdock (Unit-I)
2) Mastering Autodesk 3ds Max-by Jeffrey M. Harper (Unit-III)
3) 3Ds Max Lighting- by Boughen, Nicholas (Unit-I,II,IV)

BAST -402: 3D MAX-II (2 Credits) 45 lectures

Learning Objectives:-

1. The objective of this course is to impart technical skills/knowledge in the area of 3D designing and development.
2. Design and apply materials, Adjust basic lighting , Animate simple objects Build and animate simple, effective environments)
3. Apply motion analysis to key framed character animations.
4. Create key poses for animation using rigged characters.

Unit-I (10)

Introduction of 3D Max,Introduction of max interface,Controlling viewports
Working with files,Creating and editing objects,Selecting objects and using layers

Unit-II (12)

Grouping objects, Liking objects, Parenting objects, Understanding Rigging, Building Bone system, Using bone tool ,Forward kinematics ,Inverse Kinematics
Skinning Characters ,CAT Rig

Unit-III (11)

Understanding animation and key frames, Using time controls, Working with key, Using trackbar,Using motion panel, Animation object, Animation with constraints and simple controllers Understanding controllers types , Examining some simple controllers ,Dynamic Animation, Using Space Warps

Unit-IV (12)

Configuring and Aiming cameras, Using lights and basic light techniques, Rendering a scene and enabling quicksilver, Using Atmospheric and Render Effects, Rendering with mental ray and iray Compositing with render elements and video post interface

Learning Outcomes:

1) Ability to create simple expressions using bone rig and constraint .
2) To automatize controls on the rig
3) Ability to plan and design IK solutions for various types of structures based on the needs of animation.
4) Demonstrate ability to evaluate a mesh, and design appropriate rigging techniques to make it anima table.
5) Demonstrate ability to skin and paint weights on organic deformable meshes, and hard non-deformable meshes
6) The ability to design control systems that are user friendly, and intuitive to the end user, the animator.
7) Animate 3D rigged characters in walk cycles using inverse kinematics.

Reference Books:-

1) 3Ds Max Bible – by by Kelly L. Murdock(Unit-I-Unit IV)
2) Mastering Autodesk 3ds Max-by Jeffrey M. Harper (Unit-III)
3) 3Ds Max Lighting- by Boughen, Nicholas (Unit-I,II,IV)

BASP-408 : Animation Science Lab- XII Lectures-8 Credit-4

Learning Objectives:-

1) The primary objective of this course is to teach students the essentials of working in 3D using an array of features and tools.
2) This course teaches new users the basics of creating, embellishing, and animating 3D scenes.
3) Apply motion analysis to key framed character animations.
4) Create key poses for animation using rigged characters.

Part-I

1) Modeling with Polygon (1)
2) Modeling Architecture (1)
3) Modeling basic and Working with Sub object (1)
4) Human Body Modeling (1)
5) Advanced Multi – Layer material (1)
6) Adding Material Details with map (1)
7) Texturing Organic Objects (1)
8) Texturing Inorganic Objects (1)
9) Producing the light types (1)
10) Crating and Positioning Light Objects (1)
11) Viewing a Scene from a Light (1)
12) Creating Some Scene with Various types of light (1)
13)Working with Render Parameters
14)Creating the various Types Render
15) Creating mental ray Light and Shadow

Part-II

1. Creating Basic object (1)
2. Rig Basic objects (1)
3. Rig with Bone (Insect) (1)
4. Rig with Biped (1)
5. Rig With CAT Rig (1)
6. Create and animate flag using modifier (1)
7. Animating path Animation (1)
8. Create and Animate Architecture with animation (Walkthrough) (1)
9. Animate Insect (1)
10. Animate Scene with Light effect (Standard light) (1)
11. Animate Scene with Light effect (Photometric Animate Scene with Light effect (Photometric light) (1)
12. Render Whole Scene with Light, Texture and Animation (1)
13. Compositing Animation

Learning Outcomes:

1) After Completion of this course students will be able to develop 3D Interior or Exterior.
2) Demonstrate ability to skin and paint weights on organic deformable meshes, and hard non-deformable meshes
3) The ability to design control systems that are user friendly, and intuitive to the end user, the animator.
4) Animate 3D rigged characters in walk cycles using inverse kinematics.

Note: New theory & practical's syllabus drafted by recent technologies & updated versions of software.

Reference Books:-

1) 3Ds Max Bible – by by Kelly L. Murdock

2) Mastering Autodesk 3ds Max-by Jeffrey M. Harper

3) 3Ds Max Lighting- by Boughen, Nicholas

BAST -403: 3D MAYA - I (2 Credits) 45 lectures

Learning Objectives:-

1. Create a complete scene from photographic reference using all acquired 3D modeling techniques.
2. Create UV maps and apply simple textures and materials on hard-surface objects.
3. Critique polygonal modeling projects based on learned skills and concepts.
4. Plan, organize, and execute large scale modeling projects that include over 200 independent objects.
5. Students will be able to animate a bouncing ball in 3D Computer Graphics, using squash and stretch deformers, create movements to convey gravity and weight of a bouncing ball.
6. Students will be able to refine the ball?s squash and stretch animation with the Graph Editor.

Unit-I (12)

Introduction of 3D Maya, Introduction of Maya interface, Controlling viewports
Working with files, Creating and editing objects, Selecting objects and using layers
Hard-Surface Modeling, Understand polygon geometry

Unit-II (10)

Understand NURBS surfaces, Understand subdivision surfaces, Employ image planes
Model with NURBS surfaces, Model with polygons, Organic Modeling
Implement box modeling, Employ build-out modeling,Sculpt polygons
Use retopology tools

Unit-III (11)

Texture Mapping ,Create UV texture coordinates, Work with bump, normal, and displacement maps
Create a subsurface scattering layering shader, Work with Viewport 2.0

Unit-IV (12)

Lighting with mental ray, Use shadow-casting lights, Render with global illumination
Render with Final Gathering, Use image-based lighting, Render using the Physical Sun and Sky network Understand mental ray area lights

Learning Outcomes:-

1. Use appropriate tools and techniques to produce polygonal objects of varying complexity (hard-surface based and organic based) that can be used in games and animation media.
2. Create and fully texture a low-polygon model for use in a game engine.
3. Demonstrate ability to create organic looking 3D objects.
4. Demonstrate ability to design UV layout, and texture 3D objects.
5. Demonstrate ability to design an appropriate setup, and light a 3D scene.
6. Demonstrate ability to render a 3D scene following professional methods for maximum realism of the scene.
7. Students will be able to create a seamless texture map to apply to a 3D surface.

Reference Books:-)

1) 3Ds MAYA Bible – by by Kelly L. Murdock (Unit-I-Unit IV)
2) Maya 8: The Complete Reference 1st Edition**,** by Tom Meade ,Shinsaku Arima (Unit-I,II,III,IV)
3) Introducing Autodesk Maya 2016 (Unit-I,II,IV)

Note: New theory & practical's syllabus drafted by recent technologies & updated versions of software.

404- VFX-I: (ADOBE AFTER EFFECT, NUKE) (2 Credits) 45 lectures

Learning Objectives:-

1. Visual effects have a significant impact on the production of all types of moving images.
2. Covering all phases of production, from planning to delivery, the programme provides a comprehensive picture of the VFX production pipeline, including direct collaboration with producers of for instance films or commercials.
3. The VFX industry and its artists create new imagery and contribute in meeting the ever-increasing demand for visual effects within the entertainment industry.
4. With lecturers from the VFX industry, live projects and multidisciplinary collaboration, the programme offers versatile training and the opportunity to specialize in 3D visualization or digital compositing

Unit –I- Introduction to After Effects (12)

Workspaces, panels, viewers, Projects and compositions, Importing footage, Working with footage items, Views and previews, Layers and properties, Cameras, lights, points of interest, Animation and keyframes, Apply immersive video effects, Construct VR environments in After Effects, Setting, selecting, and deleting keyframes, Keyframe interpolation, Speed,

Unit –II- Effects (11)

Tracking 3D camera movement, Animating with Puppet tools, Color basics, Drawing, painting, and paths, Managing and animating shape paths and masks, Mask Reference, Creating and editing text layers, Extruding text and shape layers, Transparency and compositing, Keying, Roto Brush, Refine Edge, and Refine Matte effects, Markers, Basics of rendering and exporting,

Unit –III- Nuke (10)

Components of the Graphic User Interface , Navigating the Viewer, Working with Process Trees, Inserting, creating, branching, and replacing nodes, Color correcting the image, Creating Animation with Keyframes, Compositing CGI with Bigger Node Trees , 2D Tracking , RotoPaint , Keying , The IBK: Image Based Keyer, The Nuke 3D Engine ,

Unit –IV- Compositing (11)

Moving Images with a 3D Scene, Navigating the 3D world, Camera Tracking, Camera Projection , Animating the Camera , Tweaking the Texture , Compositing Outside the Scan line Render Node , Cloning nodes , 2D Compositing Inside 3D Scenes , Compositing the screen into the 3D scene

Learning Outcomes:

Student will learn **VFX-I (Adobe After Effect, Nuke)** as follows:

1. Describe what Adobe After Effects is and what it can potentially do for your video creations.
2. Demonstrate working with text, shape layers, and basic animation.
3. Demonstrate working with masks.
4. Demonstrate animating layers.
5. Demonstrate using the Puppet Tools.
6. Demonstrate using the roto brush to create mattes and extract objects.
7. Demonstrate working in 3D.

Reference Books:-

1. Adobe After Effect CLASSROOM IN A BOOK(Unit-I,II,IV)
2. ADOBE AFTER EFFECTS Help and tutorials (Unit-I,II,III,IV)
3. Getting Started with Adobe After Effects Creative Cloud 2015 - Windows (Unit-I,II,III,IV)
4. NUKE 101 Professional Compositing And Visual Effects Ron Ganbar. (Unit- III,IV)

BASP-409: Animation Science Lab- XIII Lectures-8 Credit-4

Learning Objectives:-

1) Create a complete scene from photographic reference using all acquired 3D modeling techniques.
2) Create UV maps and apply simple textures and materials on hard-surface objects.
3) Critique polygonal modeling projects based on learned skills and concepts.

Part-I

1. Create basket ball using Subdivision (1)
2. Create a screw-driver and render it. (1)
3. Create basic Boolean object using polygon (1)
4. Modeling and texturing-a-photorealistic-usb cable with Maya and mental ray (1)
5. Modeling Organic character (Toy Dragonfly) (1)
6. Modeling Organic character (human) (1)
7. Create and texture galaxy with light effect (1)
8. Texturing human character with props (1)
9. Create and texture architecture models with light effect (1)
10. Create and texture Mechanical models (1)
11. Texture UV Mapping on car with Slandered light effect (1)
12. Photoshop texturing for Maya models and animation (1)

Part-II

1. Work with Composition in After Effect. (1)
2. Create and Animate Text in After Effect. (1)
3. Build Custom Transition in After Effect. (1)
4. Create custom Glitch Effect in After Effect. (1)
5. Create Visual Effects in After Effect. (1)
6. Create Animated Background in After Effect. (1)
7. Select And Animate Layers in After Effect. (1)
8. Work with 3D in After Effect. (1)
9. Add Text With Formatting And Effects in After Effect. (1)
10. Create Animated Sun Rays in After Effect. (1)
11. Work with Composition in NUKE. (1)
12. Create and Animate Text in NUKE. (1)

13. Build Custom Transition in NUKE.
14. Create custom Glitch Effect in NUKE.
15. Create Visual Effects in NUKE.

Learning Outcomes:-

8. Demonstrate ability to design UV layout, and texture 3D objects.
9. Demonstrate ability to design an appropriate setup, and light a 3D scene.
10. Demonstrate using the Puppet Tools.
11. Demonstrate using the roto brush to create mattes and extract objects.
12. Demonstrate working in 3D.

Reference Books:-

1)3Ds MAYA Bible – by by Kelly L. Murdock

2) Maya 8: The Complete Reference 1st Edition, by Tom Meade ,Shinsaku Arima

3) Introducing Autodesk Maya 2016

4) Adobe After Effect CLASSROOM IN A BOOK

5) ADOBE AFTER EFFECTS Help and tutorials

6) Getting Started with Adobe After Effects Creative Cloud 2015 - Windows

7) NUKE 101 Professional Compositing And Visual Effects Ron Ganbar.

Note: New theory & practical's syllabus drafted by recent technologies & updated versions of software.

BAST -405: IPR AND CYBER SECURITY (2 Credits) 45 lectures

Learning Objectives:-

1. Demonstrate an understanding of how digital evidence investigative tools capture images, specifically physical and logical images;
2. Demonstrate an understanding of the types of offences investigated which are enabled by digital devices, such as computer intrusion, denial of service, identity theft, intellectual property theft, privacy, etc;
3. Demonstrate an understanding of the problems associated with computer crime and determine the rights and responsibilities of parties involved;
4. Demonstrate an ability to understand the policy considerations for governments when protecting and potentially attacking computer networks, and tackle complex intelligence management problems; and

Unit –I (Cybercrime & The Internet) (10)

Introduction. Types Of Cybercrimes,Frauds – ATM Frauds, Wire Frauds, Piracy, Child Pornography, Hacking, File Sharing. Computer Viruses & Denial Of Services.

Unit –II- (Hackers ,Crackers & IPR) (11)

Introduction & Definition, Classification. ,Software and Prevention. Ethics and Principles., Study About – Trojan Horse, Computer Worm, Spoofing, Phishing, Packet Sniffing. Study About IPR [Intellectual Property Rights]&its Principles.

Unit –III- (Cyber-frauds, Scams & Corns) (12)

Introduction on Cyber Frauds. Internet Fraud, Purchase Fraud, Online Automotive Fraud, PayPal Fraud. Online Option and Retail Schemes, Business or "Work from Home" Scheme, Money Transfer Frauds, Dating & charity Frauds. Internet Marketing & Retail Frauds.

Unit –IV- (Survilliance , Piracy & Crime Control.) (13)

Introduction & definition. Different types and Category of Piracy.Study of Computer and Network Survilliance , orporate Survilliance & Malicious Softwares. Internet Privacy – Levels of Piracy, Risks to the internet privacy & Cookies. Crime Control – Concerns of Internet Privacy & Real life Implications , Laws & Regulations. Study About the threats and IT ACTs

Learning Outcomes -

On successful completion, students will be able to:

1. Demonstrate an understanding of the impact of computer crime on government, businesses and consumers;
2. Demonstrate an understanding of the information and data of value to an investigation that is stored on, received, or transmitted by an electronic device;
3. Demonstrate an understanding of the collecting, packaging, or storing digital devices to avoid altering, damaging, or destroying the digital evidence;

Reference Books:-

1) Varun Bharatvaj – Global Security & Crime control (Unit-I,II,III,IV)
2) Mcquade S – Understanding & Managing Computer Crimes. (Unit-I,II)
3) Walden – Computer Crimes & Digital Investigation(Unit-I,II,III,IV)

BAST -406: GAME DESIGN –I (2 Credits) 45 lectures

Learning Objectives:-

1. Students use the large, complex software environment provided by the game API to develop their Object Oriented Programming skills
2. Students develop communication skills through course exercises and assignments to be able to describe a complex software project to a general audience.
3. Students work effectively as a member of a group using modern version control software to create, document and distribute a software product.
4. Learn hands-on as you execute game development tasks along with the videos—from importing assets, to scripting behavior, to building the game for publication

Unit-I (11)

Introduction of Unity,Unity Project,Unity Projects, Assets, and Scenes,Assets and Project Files Navigating Scenes and Viewports,GameObjects, Transforms, and Components Cameras,Scripting and the Unity API,Performance, Profiling, and the Stats Panel

Unit-II (12)

Materials and Textures,Mesh Renderers,Shaders, Materials for 2D Games,Method 1: Use White Ambient Light ,Method 2: Use Light-Immune Shaders,Creating Textures ,Power-2 Dimensions,Retain Quality,Expand Alpha Channels for Transparency

Unit-III (11)

Importing Textures into Unity, Importing an Alpha Texture into Unity , Quick 2D Workflow, Customizing the Editor with Editor Classes

Unit-IV (11)

Procedural Geometry and Textured Quads,Generating Atlas Textures ,UVs and Animation,Cameras and Pixel Perfection,Input for 2D Games, Getting Started with a 2D Game,Completing the 2D Card Game

Learning Outcomes:-

1. Learning Outcomes With Unity, you can learn the Unity platform and game development fundamentals from the trenches by following the production of a working game from concept all the way through to publishing.
2. Unity gives you a structured, self-study program that includes everything you and your students need to succeed:
3. All Toys game project exercise files and assets you or your students will need to follow along in Unity Focus on the essentials.
4. Learn about the job roles and skills most essential to game production, and gain Unity experience that directly maps to preparation for the Unity in this syllabus.

Reference Books:

1. Unity Cookbok – ISEC (Unit-I,II,III,IV)
3. Unity in Action: Multiplatform(Unit-I,II,III,IV)
4. Unity Game Development (Sams Tech) (Unit-I,II)
5. Unity maual helf center(Unit- III,IV)

BASP-410: Animation Science Lab- XIV Lectures-8 Credit-4

Learning Objectives:-

1) Demonstrate an ability to understand the policy considerations for governments when protecting and potentially attacking computer networks, and tackle complex intelligence management problems; and
2) Demonstrate an ability to critically evaluate the current legislation that impact on computer crimes and law enforcement responses to this legislation.
3) Students work effectively as a member of a group using modern version control software to create, document and distribute a software product.
4) 4.Learn hands-on as you execute game development tasks along with the videos—from importing assets, to scripting behavior, to building the game for publication

Part-I

1. Study on cybercrime. (Definitions, Types & Example). (1)
2. Study on Different types of computer viruses with examples. (1)
3. Study on Internet Fraud, Purchase Fraud, Online Automotive Fraud, PayPal Fraud. Online Option and Retail Schemes, Business or "Work from Home" Scheme. with examples (1)
4. Study on software Ethics, Surveillance , Piracy & Crime Control & Principle with examples. (1)
5. Write C program for- 1. Computer Worms 2. Spoofing. 3. Phishing 4. Packet Sniffing.
6. Study on Cyber Frauds & Schemes with examples. (1)
7. Study on Computer and Network Surveillance , corporate Surveillance & Malicious Software's.. (1)
8. Study on crime control technique and visit the center. (1)
9. Study on Money Transfer Frauds, Dating & charity Frauds. Internet Marketing & Retail Frauds. (1)
10. Study on threats and IT ACTs with its Laws & Regulations of IT (with examples.) (1)
11 Study on IPR [Intellectual Property Rights]&its Principles. (1)
12 Study on Internet Privacy – Levels of Piracy, Risks to the internet privacy, Cookies. (1)
13 Study on Crime Control – Concerns of Internet Privacy & Real life Implications.
14 Study on Frauds – ATM Frauds, Wire Frauds, Piracy, Child Pornography, Hacking, File Sharing.
15 Study on Ethical hacking with examples.

Part-II

1. Import character with mesh (1)
2. Creating Basic object (1)
3. Create props for game design character (1)
4. Create a Scene in Unity (1)
5. Animations in Unity (1)
6. Creating environmental background (1)
7. Map Extraction (1)

8. Particle Systems and Rigid Body Simulation in Unity (1)

9. Final Project Group with example **(1)**

10.Character Animation and Simulation **(1)**

11.Preparing A Mesh For Multiple UV Tile Painting in Mudbox **(1)**

Learning Outcomes -

On successful completion, students will be able to:

1. Demonstrate an understanding of the impact of computer crime on government, businesses and consumers;
2. Demonstrate an understanding of the information and data of value to an investigation that is stored on, received, or transmitted by an electronic device;
3. Demonstrate an understanding of the collecting, packaging, or storing digital devices to avoid altering, damaging, or destroying the digital evidence;
4)Build a working game.

Reference Books:-

1) Varun Bharatvaj – Global Security & Crime control
2) Mcquade S – Understanding & Managing Computer Crimes.
3) Walden – Computer Crimes & Digital Investigation
4) Unity Cookbok – ISEC
5).Unity in Action: Multiplatform
6) Unity Game Development (Sams Tech)
7). Unity maual helf center