

SHIVAJI UNIVERSITY, KOLHAPUR



E std. in 1962  
'A++' Accredited by NAAC (2021) with CGPA 3.52

**CHOICE BASED CREDIT SYSTEM**

**Syllabus for**

**B.Sc. Part-II**

**Animation (Entire)**

**SEMESTER III AND IV**

**(Syllabus to be implemented from June-2022)**

## **B.Sc. Part -II**

Animation (Entire)

### **SEMESTER III AND IV**

**(Syllabus to be implemented from June, 2022 onwards)**

- ❖ Guidelines shall be as per B.Sc. Regular Program
- ❖ Rules and Regulations shall be as per B.Sc. Regular Program except CBCS R.B. Sc.3 Structure of Program and List of Courses.
- ❖ Preamble:

This syllabus is framed to give sound knowledge with understanding of Animation subject to undergraduate students of B. Sc. Animation (Entire) Program. Students will learn Animation as a separate course (Subject) from B.Sc. Part - II.

The goal of the syllabus is to make the study of Animation more popular, generate an interest amongst the students about the field and encourage them for higher studies including research.

## CBCS B. Sc. Animation (Entire): List of courses

### B. Sc. Animation Part-II (Semester III & IV)

#### THEORY

Course code	Name of Course	Course code	Name of Course
<b>Semester-III</b>		<b>Semester-IV</b>	
<b>DSC AN-C1</b>	Basics of 3D Animation	<b>DSC AN-D1</b>	Advanced 3D Animation
<b>DSC AN-C2</b>	Rigging in 3D Animation	<b>DSC AN-D2</b>	Rendering in 3D Animation
<b>DSC AN-C3</b>	Cinematography	<b>DSC AN-D3</b>	Digital Editing
<b>DSC AN-C4</b>	Basics of Printing Technology	<b>DSC AN-D4</b>	Advanced Printing Technology
<b>DSC AN-C5</b>	Motion Graphics	<b>DSC AN-D5</b>	IPR & Cyber Security
<b>DSC AN-C6</b>	Basics of Production Process	<b>DSC AN-D6</b>	Programming in Dreamweaver cc
<b>AECC-C</b>	Environmental Studies (Theory)	<b>AECC-D</b>	Environmental Studies (Project)

#### PRACTICAL

<b>DSC AN-P9</b>	Lab Course IX (Based on DSC AN-C1,DSC AN-C2&DSC AN-C3)
<b>DSC AN-P10</b>	Lab Course X (Based on DSC AN-C4, DSC AN-C5 &DSC AN-C6)
<b>DSC AN_P11</b>	Lab Course XI (Based on DSC AN-D1, DSC AN-D2 &DSC AN-D3)
<b>DSC AN-P12</b>	SEC (I &II)- Color Theory LAB

\*DSCAS: Discipline Specific Core Course Animation

\*AECC: Ability Enhancement Compulsory Course: Environmental Studies

**B.Sc. Part II - Animation**  
**Semester –III**  
**DSC-AN-C1: Basics of 3D Animation**

**Total Contact Hours: 36hrs.(45 lectures of 48 minutes)**

**Credits: 03**

**Theory: 3.2 Lect./Week**

**Total Marks:50**

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**Course Outcomes:**

1. To familiarize the students with various approaches, methods and techniques of Animation Technology.
2. To develop competencies and skills needed for becoming an effective Animator.
3. Mastering traditional & digital tools to produce stills and moving images.
4. Exploring different approaches in computer animation.
5. To enable students to manage Animation Projects from its Conceptual Stage to the final Product creation
6. To apply Audio and Video Production Techniques to an Animation Project.

**Unit I**

**18 hrs**

Working in Maya-Creating and Editing MayNodes, Creating Maya Projects, Organizing Complex Node Structures with Assets, File References, Convert NURBS Surfaces to Polygons, Boolean Operations, Sculpting Polygons Using Artisan, Advanced Polygon Editing Tools Using Subdivision Surfaces , SubD Levels.

**Unit II**

**18 hrs**

Polygon Modeling Understanding Polygon Geometry Working with Smooth Polygons Using Smooth Mesh Polygons Editing Polygon Components, Adding Components, Modeling with Deformers  
Combining Meshes Polygon Modeling with Paint Effects NURBS Modeling in Maya-Understanding NURBS, Employing Image Planes Modeling NURBS Surfaces Creating Realism NURBS Tessellation

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**References:**

1. Mastering Maya 2017 by Eric Keller.
2. Introducing Maya 2017 by Dariush Derakhshani
3. Complete Maya Programming Volume II An In-depth Guide to 3D Fundamentals, Geometry, and Modeling.
4. Game Character Development with Maya.
5. 2D Artwork and 3D Modeling for Game Artists.

### **Practical Based on Basics of 3DAnimation**

1. How do you make a cube in 3D .
2. How do you make texture to cube
3. How do you use image plan
4. How do you rotate object in 3D
5. How do you mirror in 3D
6. How do you center a model in 3D
7. How do you duplicat in 3D
8. How do you fill hole in 3D
9. How do smooth object in 3D
10. How do you use the snap tool

**B.Sc. Part II - Animation**  
**Semester –III**  
**DSC-AN-C2: Rigging in 3D Animation**

**Total Contact Hours: 36hrs.(45 lectures of 48 minutes)**

**Credits: 03**

**Theory: 3.2 Lect./Week**

**Total Marks:50**

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**Course Outcomes:**

1. Students learn about Rigging process in Maya, they are elaborated with creation of different kind of rigs for characters and objects.
2. Students learn animation Maya, they practice to apply various animation principles and learn different tools for Animation in Maya.
3. Student learn various techniques of Animation in Maya.

**Unit I**

**18 hrs**

Understanding Rigging, Creating and Organizing Joint Hierarchies, Orienting Joints, Naming Joints, Mirroring Joints, Rigging the Giraffe, IK Leg, FK Blending, Rotate Plane Solvers, Creating Custom Attributes Spline IK, Full Body Inverse Kinematics, Skinning Geometry

**Unit II**

**18 hrs**

Interactive/Smooth Binding, Weighting the Giraffe, Painting Skin Weights, Editing Skin Weights in the Component Editor, Copying Skin Weights, Mirroring Skin Weights, The Maya Muscle System Understanding the Maya Muscle System, Using Capsules, Creating a Muscle Using Muscle Builder, Editing Muscle Parameters, Converting the Smooth Skin to a Muscle System, Sliding Weights

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**References:**

1. Mastering Autodesk Maya 2017 by Eric Keller.
2. Introducing Maya 2017 by Dariush Derakhshani.
3. Body Language: Advanced 3D Character Rigging
4. An Essential Introduction to Maya Character Rigging
5. Handbook of Rigging

**Practical Based on Rigging in 3D Animation**

1. How do you rig object in 3 D Animation?
2. How do you rig a 3D animation?
3. What are rigging tools?
4. How do you animate rigging in 3D Animation?
5. Can you rig a 3D model?
6. How do you rig a low poly character?
7. How does a rigger work?
8. How do you attach an object to an animation in 3D Animation?

## **B.Sc. Part II - Animation**

### **Semester –III**

#### **DSC-AN-C3: Cinematography**

**Total Contact Hours: 36hrs.(45 lectures of 48 minutes)**

**Credits: 03**

**Theory: 3.2 Lect./Week**

**Total Marks:50**

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#### **Course Outcomes:**

1. Work in experimental and manipulative techniques, candid and contrived imagery, documentary photography, archival processing, and interpretive studies.
2. Familiar with and command of materials, equipment, and library resources related to the study of photography.
3. Work and study independently.
4. Understand 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.
5. Understand the industrial and commercial applications of photographic techniques design principles, developing throughout the degree program, with attention to such areas as design, color, and lighting.

#### **Unit I**

**18 hrs**

Introduction to Cinematography, Film Dimension, Film Packaging, Processing and Printing, Films in Motion Pictures, Screening of Films, Cameras for Motion Picture,

#### **Unit II**

**18 hrs**

Different types of Shooting formats, Various Camera tests, Audio and video editing, Screening of films, Demo reel, Film Packaing, Shooting through Mirrors, Rigging the Camera, Digital Film Production, Aerial Photography, Different types of film cameras, Cinema Projection,

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#### **References:**

1. Cinematography: Theory and Practice: Image Making for Cinematographers and Directors
2. The Filmmaker's Eye: Learning (and Breaking) the Rules of Cinematic Composition
3. The Five C's of Cinematography: Motion Picture Filming Techniques
4. Film Theory An Introduction Through The Senses
5. Focal Press Book: The Complete Film Production Handbook

## **Practical Based on Cinematography**

1. How do you start cinematography?
2. How do u shoot cinematography?
3. How important is cinematography?
4. How do you make a good cinematography?
5. How can I practice cinematography at home?
6. How can become a better cameraman?
7. How do you become a sports camera operate?
8. How do you editing Audio and video?
9. How do you Shooting through Mirrors?
10. How do you test Various Camera?



**B.Sc. Part II - Animation**  
**Semester –III**  
**DSC-AN-C4: Basics of Printing Technology**

**Total Contact Hours: 36hrs.(45 lectures of 48 minutes)**

**Credits: 03**

**Theory: 3.2 Lect./Week**

**Total Marks:50**

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**Course Outcomes:**

1. The primary goal is to prepare students for a successful professional career in the Printing Technology.
2. To get good knowledge of printing process. During the course we can learn various types of printing process, methods of surface preparation, color theory ,proofing techniques etc.
3. Also you can learn different types of new devices used in printing technology like image setter

**Unit I**

**18 hrs**

Installation of Plate and Blanket, Setting of Feeder, Impression & Delivery according to the thickness and size of the stock, Applying ink, damping solution – make ready, printing with registration, Practice on Flexography & Gravuare Printing Machine , Installation of Stereo or Image Cylinder, Fitting the Web path, maintaining proper tension., Choosing the right Anilox/ adjusting the Doctor Blade, Adjusting the ink viscosity by Flow cup, Maintaining the proper drying temperature – make ready, printing with registration,

**Unit II**

**18 hrs**

Practice on Screen Printing Machine, Study of various type of screen materials , Screen stretching techniques, Screen preparation – Direct, Stencil preparation - Indirect, Direct/ Indirect, Screen printing of various routine documents , Printing on various substances , Screen Reclamation, 2 Colour Screen Printing , 4 Color Screen Printing, Study of automatic Screen Printing,

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**References:**

1. Modern lithography – Ian Faux – SITA Ltd.
2. Printing Materials Science and Technology – Thompson, Bob – PIRA Publication
3. The Printing Production Manual – J. Peacock, C.Berrel and Barnard – PIRA Publication
4. Printing Technology
5. The Psychology Book: Big Ideas Simply Explained

**Practical Based on Basics of Printing Technology**

1. How do you Screen Printing Machine?
2. How do you Installation of Plate?
3. How do you Installation of Stereo?
4. How to check proper drying temperature?
5. How to check Screen printing proper document?
6. How do you printing with registration?

## **B.Sc. Part II - Animation**

### **Semester –III DSC-AN-C5: Motion Graphics**

**Total Contact Hours: 36hrs.(45 lectures of 48 minutes)**

**Credits: 03**

**Theory: 3.2 Lect./Week**

**Total Marks:50**

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#### **Course Outcomes:**

1. Employ the terminology of motion graphic design when presenting, critiquing, or discussing, motion graphic design ideas and solutions.
2. Analyze motion graphics in contemporary and historical contexts.
3. Apply graphic design principles to time-based works.
4. Produce motion graphics in a range of professionally-recognized forms.
5. Utilize appropriate content and techniques to tell a story.
6. Compile a portfolio of motion graphic design.

#### **Unit I**

**18 hrs**

**Motion Graphics: A Perspective:** History of Motion Graphics, Motion Graphics in Film and Television, The Pictorial Composition, Space and Composition: An Overview, Principles of Composition, Constructing Space ,

**The Sequential Composition:** Overview, Forms of continuity, Forms of Discontinuity ,Montage,

#### **Unit II**

**18 hrs**

**Conceptualization:** Assessment, Formulation, Cultivation, Storyboards, Animatics 9,

**Animation Processes:** Frame-by-frame Animation, Interpolation, Spatial Interpolation ,Visual Interpolation ,Temporal Interpolation ,Coordinating Movement,

**Motion Graphics Compositing:** Compositing: An Overview, Blend Operations, Keying Alpha Channels, Mattes, Masks,

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#### **References:**

1. Motion Graphic Design: Applied History and Aesthetics. Author: Jon Krasner. ISBN: 9780240809892. Publisher: Focal Press.
2. Design for Motion: Fundamentals and techniques of motion design. Author: Austin Shaw, Focus Press, 2015 ISBN 10-1138812099.
3. Creating Motion Graphics with After Effects
4. Hands-On Motion Graphics with Adobe After Effects CC
5. Adobe After Effects CC Classroom in a Book

## **Practical Based on Motion Graphics**

1. How do you plan a motion graphic?
2. What is the process of motion graphic?
3. How do you animate a picture?
4. How do you start motion graphic?
5. How do you create a motion graphic template?
6. How do you make animated videos on android?
7. How can you turn u r photo into a cartoon?
8. How do you moving video with pictures?
9. How do you make graphic novel?
10. How do you make simple comic?

**B.Sc. Part II - Animation**  
**Semester –III**  
**DSC-AN-C6: Basics of Production Process**

**Total Contact Hours: 36hrs.(45 lectures of 48 minutes)**

**Credits: 03**

**Theory: 3.2 Lect./Week**

**Total Marks:50**

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**Course Outcomes:**

1. The student will be having the capability of selecting suitable manufacturing processes to manufacture the products optimally.
2. The student will be able to recommend the appropriate design of gating systems, forming processes, welding process and NDT technique.
3. The student will be able to develop simplified manufacturing processes with the aim of reduction of cost and manpower.
4. The student will be able to identify/control the appropriate process parameters, and possible defects of manufacturing processes so as to remove them.
5. The student will be able to make use of the softwares and CAD/Cam tools meant for optimizing manufacturing processes

**Unit I**

**18 hrs**

Basic steps to make a 3d animation, Why do we need a production pipeline?, What is the production pipeline?, An introduction of the various departments of 3d animation studio. , Key position in a 3d Animation studio and their role, director, producer , lead technical director, lead animator, structure of organization and various departments, Introduction to pipeline “stages”, story, script, storyboarding , casting voice over, Background audio , animatic, character designing, background and layouts, staging,

**Unit II**

**18 hrs**

Production process- Character modeling, , texturing and Shading, background creation, props modeling,Rigging Character animations, Lighting the scenes., Postproduction: Rendering, soft-ware rendering, mental ray rendering, Hard-ware rendering, image sequences, rendering passes, compositing dynamics, special effects. ,

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**References:**

1. 3D Animation Essentials by Andy Beane
2. Body Language - Advanced 3D Character Rigging by- Eric Allen & Kelly L.
3. Murdock Maya 2017- Character Modeling and Animation by Tereza Flexman
4. The 3D production Pipeline by Fabio Pellacini
5. All About techniques in drawing for animation production

## **Practical Based on Basics of Production Process**

1. How do you control production process
2. How do you Postproduction: Rendering in soft-ware
3. How do you start production of Character modeling
4. How do you start production of background creation
5. How do you start production of special effects
6. How do you start production of Hard-ware rendering
7. How do you start production of props modeling
8. How do you start production of background and layouts
9. How do you start production of Rigging Character animations
10. How do you start production of stages story, script, storyboarding

**B.Sc. Part II - Animation**  
**Semester –IV**  
**DSC-AN-D1: Advanced 3DAnimation**

**Total Contact Hours: 36hrs. (45 lectures of 48 minutes)**

**Credits: 03**

**Theory: 3.2 Lect./Week**

**Total Marks:50**

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**Course 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. Create organic looking 3D objects.
4. Design UV layout, and texture 3D objects.
5. To develop the skill & knowledge in 3D Modeling.
6. Students will understand the knowhow and can function either as an entrepreneur or can take up jobs in the multimedia and animation industry, video studios, edit set-up and other Special Effects sectors.

**Unit I**

**18 hrs**

Using Joints and Constraints, Inverse Kinematics, Keyframe Animation, The Graph Editor, Playblast and FCheck, Driven Keys, Animation Using Expressions, Motion Path Animation, Animating Constraints.

**Unit II**

**18 hrs**

Animation Layers, Creating an Animation Layer, Animating Facial Expressions Using Blend Shapes, Animating Blend Shapes Sequentially, Animating with Lattices, Animating Object Components with Clusters, Animating a Scene Using Nonlinear Deformers, Creating a Jiggle Effect, Optimizing Animations with the Geometry Cache.

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**References:**

1. Mastering Maya 2017 by Eric Keller.
2. Introducing Maya 2017 by Dariush Derakhshani
3. Complete Maya Programming Volume II An In-depth Guide to 3D Fundamentals, Geometry, and Modeling.
4. Game Character Development with Maya.
1. 5. 2D Artwork and 3D Modeling for Game Artists.

## **Practical Based on Basics of Advanced 3D Animation**

1. Assignment on Table and chair.
2. Assignment on Human Body Model.
3. Assignment on Face Model.
4. Assignment on Fruit Dish Model.
5. Assignment on Bike and animate.
6. Assignment on Car model and animate.
7. Assignment on Path animation.
8. Assignment on Camera movements.
9. Assignment on Flag simulation.
10. Assignment on Garment maker.

**B.Sc. Part II - Animation**  
**Semester –IV**  
**DSC AN-D2: Rendering in 3D Animation**

**Total Contact Hours: 36hrs.(45 lectures of 48 minutes)**

**Credits: 03**

**Theory: 3.2 Lect./Week**

**Total Marks:50**

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**Course Outcomes:**

1. Students learn different kinds of lights and light setup in a Maya scene.
2. Students learn to use lights and to set their attributes more precisely.
3. Students learn to create shadows
4. Fog in Maya lighting system.
5. Finally students are trained to get final output of their scene using various rendering techniques.

**Unit I**

**18 hrs**

Using the Paint Effects Canvas, Painting on 3D Objects, Understanding Strokes, Designing Brushes, Rendering Paint Effects, Using Toon Shading, Render Layers, Render Passes.

**Unit II**

**18 hrs**

Render Pass Contribution Maps, Setting Up a Render with mental ray, mental ray Quality Settings, Using Fluid Containers, Creating a Reaction, Rendering Fluid Containers, Create Fluids and nParticle Interaction.

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**References:**

1. Mastering Maya 2017 by Eric Keller.
2. Introducing Maya 2017 by Dariush Derakhshani
3. Complete Maya Programming Volume II An In-depth Guide to 3D Fundamentals, Geometry, and Modeling.
4. Game Character Development with Maya.
5. 2D Artwork and 3D Modeling for Game Artists.

**Practical Based on Basics of Rendering in 3D Animation**

1. Assignment on Table and chair
2. Assignment on Human Body Model
3. Assignment on Face Model
4. Assignment on Fruit Dish Model
5. Assignment on Bike
6. Assignment on Car model
7. Assignment on Book cover
8. Assignment on Magazine cover
9. Assignment on CD cover
10. Assignment on Wood carving



**B.Sc. Part II - Animation**  
**Semester –IV**  
**DSC-AN-D3: Digital Editing**

**Total Contact Hours: 36hrs.(45 lectures of 48 minutes)**

**Credits: 03**

**Theory: 3.2 Lect./Week**

**Total Marks:50**

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**Course Outcomes:**

1. Student will learn sound editing for songs and understand various digital audio formats.
2. Student will gain skill for recording & mixing with song.
3. Student will learn special effect for audio and understand the loops, play lists.
4. Student will introduced to video editing software & edit videos for movie / presentation and understand various digital video formats. Student will learn special effect for movie like Star trek transporter effect, Blurring a part of an image,
5. Ghost effect, highlighting a part of an image etc.

**Unit I**

**18 hrs**

Manipulating audio: Auto trim/crop, mute, DC offset, resample, reverse, smooth/enhance, Fade in/out, insert silence, bit depth converter etc, Understanding various digital audio formats like .WAV, .AIFF, .MP3, .swf, .WMA etc, Understand audio plug-in, importing and exporting into multiple audio file formats like MP3, real audio, QuickTime formats, etc. Event tool: move, split, slip and trim multiple events, create fades, apply ASR attack/sustain/release), etc.

Spectrum analysis tools, scrub tool etc, statistics tool (Max, RMS, DC offset, zero crossings), sampler tool etc, Audio editing: workflow, real time editing, event based editing, waveform volume and pan envelopes, Edit, record, encode and master digital audio, editing audio by drag and drop options, cross fading audio tracks, balancing sound levels, creating smooth fades etc.

Understanding Multichannel audio recording, synchronize audio and video. Understanding regions and play lists, editing of fields, name markers, loops, and regions, Time and frames. Audio effects like: EQ, Volume, chorus, distortion, Delay/echo, pitch, bend/shift, reverb, vibrato, normalize etc Insert track markers, adding multiple tracks, adjusting track time, musical instrument file processing

**Unit II**

**18 hrs**

Premiere: Concept of non linear editing, The basics of editing: Overview Importing and Exporting: various audio, video and graphics in various formats Edit, manipulate and arrange these elements in visual timeline, understand all Tools on toolbox for editing clips., Titling and superimposing , Panels: Tools panel, Project, Monitors: Source and program, Timeline, Audio meters, Misc. Tasks and functions: Titles, Transitions, speed and duration, Effects, Key frames, Types of edit, Opacity, trimming, Adding Special effects like: Star trek transporter effect, Blur part of an image, Ghost effect, Highlight part of an image etc.

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**References:**

1. Film Editing: Great Cuts Every Filmmaker and Movie Lover Must. Know Author: Gael
2. Apple Final Cut Pro X: In-Depth with Larry Jordan

3. Professional video editing made easy
4. In the Blink of An Eye: 2nd Edition: New Edition
5. The Technique of Film and Video Editing: History, Theory, and Practice” by Ken Dancyger

### **Practical Based on Basics of Digital Editing**

1. How do you use trip/crop Manipulating audio?
2. How do you use Ghost effect?
3. Assignment on Adding Special effects.
4. Assignment on Star trek transporter effect.
5. Assignment on adding multiple tracks, adjusting track time, musical instrument file processing.
6. Assignment on importing and exporting into multiple audio file formats like MP3.
7. Assignment on Blurring a part of an image.
8. Assignment on gain skill for recording & mixing with song.
9. Assignment on manipulate and arrange elements in visual timeline.
10. Assignment on balancing sound levels, creating smooth fades.

**B.Sc. Part II - Animation**  
**Semester –IV**  
**DSC-AN-D4: Advanced Printing Technology**

**Total Contact Hours: 36hrs.(45 lectures of 48 minutes)**

**Credits: 03**

**Theory: 3.2 Lect./Week**

**Total Marks:50**

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**Course Outcomes:**

1. Explain the basics of a computer hardware and software
2. Solve problems related to number systems
3. Define basics of Operating System
4. Familiarize with networking components
5. Write simple C programs

**Unit I**

**18 hrs**

Digital printing – Definition, Scope and job suitability of Digital printing process.  
Basic principle of Computer-to-Film, Computer-to-Plate, Computer-to-Press and Computer-to-Print.  
Computer-to-Press – Working principle of Direct Imaging with once imaginable master and Working principle of Direct Imaging with re-imageable master. Computer-to-Print – Working principle

**Non-Impact Printing Technologies**

Basic principle of Non-impact printing technology, Flow chart of NIP technology and Applications of NIP technology. Basic principle of Electrophotography – Imaging, Inking, Toner transfer, Toner fixing and Cleaning. Basic principle of Ionography – Imaging, Developing, Toner transfer, Toner fixing, Cleaning and Erasing. Basic principle of Thermography – Direct thermography, Transfer thermography, Working principle of thermal transfer and thermal sublimation printing systems and Properties of ink tonner for Thermography. Basic principle of Ink jet printing - Continuous ink jet and Drop on demand ink jet, Working principles of continuous ink jet and drop on demand ink jet and Properties of ink tonner for ink jet printing.

**Unit II**

**18 hrs**

**Security Printing Features and Materials**

Security design features - Pantograph screens, Void pantograph Screen, ODT - optical deterrent technology, Guilloches, Warning bands, Code safe, High resolution graphics and Padlock icon - Application of security printing. Security papers – Safety paper, Chemical reactive paper, Special papers, Water mark paper and Copy evident paper. Security threads - Metalized thread, Windowed thread, Holographic windowed thread, Micro text, Clear text and Thermo text. Watermark, Classification of watermark - Line drawing watermark, shaded watermark and Digital watermark. Security inks – Trademark colors, Color changing ink, Magnetic ink, Copy protection ink, Erasable ink, Fugitive ink, Pen reactive ink, Heat reactive ink, Coin reactive inks, Migrating ink, Bleeding inks, Florescent ink, Metallic ink and UV ink.

### **Special Printing Technologies**

Basic principles of hybrid printing system and Application of Hybrid printing systems. Basic principles of holograms making process, Components of hologram making system - laser, lenses, beam splitter, mirrors, holographic film and Process steps of hologram making system. Basic principles of lenticular printing process. Basic principles of waterless offset printing, Plate structure of waterless offset printing, Merits and Demerits of waterless offset printing.

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### **References:**

1. Modern lithography – Ian Faux – SITA Ltd.
2. Printing Materials Science and Technology – Thompson, Bob – PIRA Publication
3. The Printing Production Manual – J. Peacock, C. Berrel and Barnard – PIRA Publication
4. Complete Technology Book on Printing Ink
5. Science and Technology of Printing Materials

### **Practical Based on Advanced Printing Technology**

1. Assignment on Toner fixing and Cleaning
2. Assignment on lenticular printing process.
3. Assignment on waterless offset printing
4. Assignment on High resolution graphics and Padlock icon - Application of security printing
5. Assignment on Cleaning and Erasing Ionography
6. Assignment on Water mark paper and Copy evident paper
7. Assignment on Digital printing
8. Assignment on Computer-to-Print
9. Assignment on waterless offset printing
10. Assignment on Classification of watermark - Line drawing watermark, shaded watermark and Digital watermark

## **B.Sc. Part II - Animation**

### **Semester –IV**

### **DSC-AN-D5: IPR & Cyber Security**

**Total Contact Hours: 36hrs.(45 lectures of 48 minutes)**

**Credits: 03**

**Theory: 3.2 Lect./Week**

**Total Marks:50**

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#### **Course Outcomes:**

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

#### **Unit I**

**18 hrs**

##### **Introduction to Intellectual Property Rights:**

Introduction to IPR, Need of Intellectual Property Protection, Introduction to Patents & Copyright History of IPR, Trade and Investment, Introduction to Copyright, Software and Internet Introduction, Copyright as a Stimulus To Creation Copyright And Access, Copyright and Computer Software, The Patent System: Introduction, Scope of Patentability, Patentability Standards, Exceptions to Patent Rights Patenting in India, Process of Patenting in India, Overview of Networking Concepts: Basics of Communication Systems, Transmission Media, Network Topologies, Network Types, ISO / OSI and TCP / IP Protocol Stacks, Internetworking Packet Formats, Wireless Networks Internet.

#### **Unit II**

**18 hrs**

Security Threats and Vulnerabilities: Overview of Security threats Hacking Techniques, Password Cracking, Insecure Network connections Malicious Code, Programming Bugs, Cybercrime and Cyber terrorism Information Warfare and Surveillance

Basics of Cryptography: Introduction to Cryptography Symmetric key Cryptography Asymmetric key Cryptography Mechanisms of Cryptography, Message Authentication and Hash functions Digital Signatures

Public Key infrastructure Applications of Cryptography, Tools and Techniques of Cryptography

Security Management: Security Management Practices Overview of Security Management Information Classification Process Security Policy, Risk Management, Security Procedures and Guidelines, Business Continuity Planning (BCP), Disaster Recovery Planning  
Server Management and Firewalls: Introduction to Firewalls Overview of Firewalls Types of Firewalls, DMZ and firewall features  
Security for VPN: VPN Security, Security in Multimedia Networks , System and Application Security, Desktop Security, Operating System security Mobile security, email security  
Web Security: web authentication, SSL and SET Database Security

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### **References:**

1. Book-1 - Laws Relating to Intellectual Property by Dr. B. L. Wadehra, Fourth Edition, Universal Law Publishing Co.
2. Book-2 - Cyber Security: Understanding Cyber Crimes, Computer Forensics and Legal Perspectives by Sunit Belpure and Nina Godbole, Wiley India Pvt. Ltd.
3. Book-3 - Information Systems Security: Security Management, Metrics, Framework and Best Practices by Nina Godbole, Wiley India Pvt. Ltd.
4. Book-4 - Network Security Essentials, Applications and Standards By William Stallings, Pearson Education.

### **Practical Based on IPR & Cyber Security**

1. How do you protect my IPR?
2. How do you protect your ideas?
3. How can we protect technology?
4. How do you avoid copyright?
5. How do you prove copyright?
6. How do you post a video without copyright?
7. How do you copyright a video?
8. Do you copyright video get less views?
9. What is you tube illegal?
10. Can you monetize my channel with copyright claim?

## **B.Sc. Part II - Animation**

### **Semester –IV**

#### **DSC-AN-D6: Programming in Dreamweaver cc**

**Total Contact Hours: 36hrs.(45 lectures of 48 minutes)**

**Credits: 03**

**Theory: 3.2 Lect./Week**

**Total Marks:50**

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#### **Course Outcomes:**

1. Simple and impressive design techniques, from basics till advanced to focus on goal oriented and user centric designs.
2. Know How to and where to start research, planning for website & actually build excellent web sites.
3. Learn pro level skills in SEO with keyword research and content strategy for your website.
4. Learn the skills of successfully designing the website
5. Learn proper knowledge of appropriate insertion of texts, formats and columns or tables 3.. Learn basics of the application of the software, and the exact areas you want to use it for

#### **Unit I**

**18 hrs**

Overview: Defining a site, Design View, Code View and Live View Browser rendering engines Inserting objects Linking and Targeting

CSS Basics: Tag Selectors Embedded vs. linked CSS rules Different Views in Dreamweaver Getting Help

Building Your First Web Site: Site Definition Formatting and Links Validating code

#### **Unit II**

**18 hrs**

Tables vs. CSS layouts: Building Tables, Static vs. Elastic design, Using the DIV element Automation, Creating a Template from an Existing Page Creating a Template from Scratch , Defining Editable Regions, Forms Inserting Forms, Validation

Uploading a Site: Defining the Remote Site, Cloaking files C. Saving site definition files

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#### **References:**

1. Adobe Dreamweaver CC For Dummies
2. Adobe Dreamweaver CS6 Classroom in a Book
3. Dreamweaver MX 2004 Bible
4. Sams Teach Yourself Dreamweaver CS5 in 24 Hours
5. Adobe Dreamweaver CS6 Digital Classroom

## **Practical Based on Programming in Dreamweaver cc**

- 1 Can you use Dreamweaver with wordpress?
- 2 Who should use Dreamweaver?
- 3 What are the disadvantage of Dreamweaver?
- 4 What programming language does adobe?
- 5 Dreamweaver use5.Can you do python in Dreamweaver?
- 6 What does CC stand for in Dreamweaver?
- 7 Do you use Dreamweaver professionals?