B.Sc. Animation III (Entire)

Shivaji University, Kolhapur

With Effect from June 2015-16

Structure, Nature of Question Paper, Course Curriculum

B.Sc III Animation Syllabus

From June 2015-16

Animation is a lead Course in today's world. It has very good prospects and it gives a broad platform to student creativity. The course has wild scope. By considering the need of different industries and present senario in animation industry the syllabus is designed. While designing the syllabus intelluctual level of UG students has been consider. The sudent who don't no the ABC of animation will be able to understood and work indipendenly in the industrial world after complition of his graduate degree.Animation is not only creation of cartoons but also its plays important role in Automobile industry,Mechanical industry,Web development ,different coding,Graphics designing, Film industry and etc.

While designig the syllabus, industrial training and letest softwares like Adobe Photoshop, Corel draw, Adobe Flash, Dream viewer, autodesk 3D Max, autodesk 3D Maya, Adobe after Effect, Mudbox are considered.

Student and teachers have to go through this syllabus by taking a knee interest and learn much and more.

B.Sc. Part III

Semister-V

Theory

Paper Code	Title of the Paper	Period/ Week	Examination Marks		
			Internal	Theory	Total
AME 501	3D Modeling-II (3D MAYA)	03	10	40	50
AME 502	3D Texturing-II	03	10	40	50
AME 503	3D Lighting-II	03	10	40	50
AME 504	3D Regging-II	03	10	40	50
AME 505	English-III	03	10	40	50

Semester-VI

Theory

Paper Code	Title of the Paper	Period/ Week	Examination Marks		
			Internal	Theory	Total
AME 601	3D Animation-II	03	10	40	50
AME 602	3D Rendering-II	03	10	40	50
AME 603	V.F.X.	03	10	40	50
AME 604	Introduction to Advertisement and Market Research	03	10	40	50
AME 605	English-IV	03	10	40	50

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Semester-V

Total Marks-50(40+10)

Paper No: AME- 501

SYLLABUS

Title of the Paper: **3D Modeling-II (3D MAYA)**

Topics	Lectures 40
Unit 1 Working in Maya-Creating and Editing Maya Nodes, Creating Maya Projects, Organizing Complex Node Structures with Assets, File References.	10 10
Unit 2 NURBS Modeling in Maya-Understanding NURBS, Employing Image Planes, Modeling NURBS Surfaces, Creating Realism, NURBS Tessellation	
Unit 3 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	10
Unit 4 Convert NURBS Surfaces to Polygons, Boolean Operations, Sculpting Polygons Using Artisan, Advanced Polygon Editing Tools, Using Subdivision Surfaces, SubD Levels	10

Reference Books:- Mastering Autodesk Maya 2011 by Eric Keller

Total Marks-50(40+10)
Paper No: AME- 502

Title of the Paper: **3D Texturing-II**

Topics	**Lectures** **40**
Unit 1 - UV Texture Layout, What Are UV Texture Coordinates? Mapping the Giraffe Leg Unfolding UVs Mapping the Giraffe Head Mirroring UVs More UV Tools	10
Unit 2 -Arranging UV Shells Additional UV Mapping Considerations Transferring UVs Multiple UV Sets Optimizing Textures	10
Bump and Normal Mapping **Unit 3 -** Bump Maps Normal Maps Creating Normal Maps Applying Normal Maps	10
Displacement Mapping Converting Displacement to Polygons **Unit-3** Displacement Maps for Characters Combined Displacement and Bump Maps Subsurface Scattering Fast, Simple Skin Shader Setup Subsurface Scattering Layers	10

Reference Book:- Reference Books:- Mastering Autodesk Maya 2011 by Eric Keller

Total Marks-50(40+10)

Paper No: AME- 503

Title of the Paper: **3D Lighting-II**

Topics	**Lectures** **40**
Unit-1 Shadow-Casting Lights Shadow Preview Depth Map Shadows mental ray Shadow Map Overrides Ray Trace Shadows	10
Unit-2 Indirect Lighting: Global Illumination Global Illumination Tuning Global Illumination Working with Photon Maps Color Bleeding	10
Unit-3 Importons Caustics Caustic Light Setup Indirect Illumination: Final Gathering Light-Emitting Objects	10
Unit-4 Final Gathering Maps Using Lights with Final Gathering Image-Based Lighting Enabling IBL IBL and Final Gathering	10

Reference Books:- Reference Books:- Mastering Autodesk Maya 2011 by Eric Keller

Total Marks-50(40+10)
Paper No: AME-504

Title of the Paper: **3D Regging-II**

Topics	Lectures 40
Unit-1 Understanding Rigging Creating and Organizing Joint Hierarchies Orienting Joints Naming Joints Mirroring Joints Rigging the Giraffe IK Legs	10
Unit-2 FK Blending Rotate Plane Solvers Creating Custom Attributes Spline IK Full Body Inverse Kinematics Skinning Geometry	10
Unit-3 Interactive/Smooth Binding Weighting the Giraffe Painting Skin Weights Editing Skin Weights in the Component Editor Copying Skin Weights Mirroring Skin Weights	10
Unit-4 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	10

Reference Books:- Reference Books:- Mastering Autodesk Maya 2011 by Eric Keller

Total Marks-50(40+10)

Paper No: AME- 601

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Semester-VI

SYLLABUS

Title of the Paper: **3D Animation-II**

Topics	Lectures 40
Unit 1 Using Joints and Constraints Inverse Kinematics Keyframe Animation The Graph Editor	10
Unit 2 Playblast and FCheck Driven Keys Animation Using Expressions Motion Path Animation Animating Constraints	10
Unit 3 Animation Layers Creating an Animation Layer Animating Facial Expressions Using Blend Shapes Animating Blend Shapes Sequentially Animating with Lattices	10
Unit 4 Animating Object Components with Clusters Animating a Scene Using Nonlinear Deformers Creating a Jiggle Effect Optimizing Animations with the Geometry Cache	10

Reference Books:- Reference Books:- Mastering Autodesk Maya 2011 by Eric Keller

Total Marks-50(40+10)

Paper No: AME- 602

Title of the Paper: **3D Rendering-II**

Topics	**Lectures** **40**
Unit 1 Using the Paint Effects Canvas Painting on 3D Objects Understanding Strokes Designing Brushes	10
Unit 2 Rendering Paint Effects Using Toon Shading Render Layers Render Passes	10
Unit-3 Render Pass Contribution Maps Setting Up a Render with mental ray mental ray Quality Settings Using Fluid Containers	10
Unit-4 Creating a Reaction Rendering Fluid Containers Create Fluids and nParticle Interactions	10

Reference Books:- Reference Books:- Mastering Autodesk Maya 2011 by Eric Keller

Total Marks-50(40+10)

Paper No: AME- 603

Title of the Paper: **V.F.X.**

Topics	**Lectures** **40**
Unit-1 **Introduction** – Operating System, Installing Software, Keyboard shortcuts & Modifiers, Re-setting the Preference **Interface –** Understanding the Interface, Importing Files, Customizing the workspace **Basic** – Basic Animation **Import –** Importing Photoshop compositions, Importing illustrator compositions, Importing image sequences, Importing from editing application, Adobe Bridge	10
Unit-2 **Animation –** Animation Rules – Part 1, Animation Rules – Part 2, Animation Rules – Part 3, **Compositing –** Channels**,** Nesting, Pen Tool, Adjusting Mask Properties, Blending Modes, Basic Keying **Grouping –** Pre-composing**,** Parental Hierarchy, Working with null objects	10
Unit-3 **Effects –** Color Effects, Time Effects, Animation Preset **Text -** Fonts **,** Basic Texts, Text animators, Applying effects to text, Text Presets **3D –** 3D in after effects, 3D workspace, Camera Basic, Lighting Basic, Casting Shadows	10
Unit-4 **Paint –** Paint Basic, Animating Paint, Matte Painting, Advanced Cloning **Expressions –** Disabling Expressions**,** Linking Properties, Basic Arithmetic **Output** – Rendering movie, Rendering multiple items, Exporting alpha channels, The exporting menu	10

Reference Books:- * **Creative after effects 7 - Angie Taylor**

Total Marks-50(40+10)

Paper No: AME-604

Title of the Paper: **Introduction to Advertisement and Market Research**

Topics	**Lectures** **40**
Unit-1 The Basics of Market Research Research Objectives Research Design	10
Unit-2 An Introduction to Research Methodologies Introduction to Qualitative Research Introduction to Quantitative Research	10
Unit-3 Introduction to Sampling An Introduction to Questionnaire Design Turning Data into Findings	10
Unit-4 Reporting and Communicating Findings Professional Development and the Market Research Industry	10

Reference Books:- A Practical Guide to Market Research by Paul Hague

Practical Course

Course No.	Title	Period / Week	Examination Marks		
			Internal	Final	Total
AME111	Animation Lab - I (practical based on 501 +504)	04	----	50	50
AME112	Animation Lab - II (practical based on 502 +503)	04	----	50	50
AME113	Animation Lab - III (practical based on 601 +602+603)	04	----	50	50
AME114	Animation Lab - IV (Project and Industrial Training)	04	----	50	50

LABORATORY COURSE

Laboratory course Animation Lab- **I** - 3D Modeling II + 3D Rigging II

(AME 501 + AME 504)

Group I – AME 501

1. Working with Polygon Modeling
2. Polygon :- Selection, Creation, combining, separating, Splitting and Editing
3. Working with Nurbs Modeling
4. Nurbs :- Creating curves, Creating Surfaces, Editing , Trimming, Stitching and Sculpting surface meshes
5. Subdivision Surface Modeling in Maya
6. Subdivision :-surface conversion, Editing surface, Editing Uvs
7. Create Various Basic 3D geometrical shapes
8. Create Basic Polygon inorganic objects (lamp, Mobile, computer, Bike, Car)
9. Create basic architectural polygon modeling
10. Create Interior with polygon and Subdivision
11. Create male and female body with polygon modeling with details
12. Create Cartoon and semi cartoon characters with poly
13. Surface Character Modeling (Mouse Embryo)
14. Create male and female body with subdivision modeling with details
15. Create environment modeling (tree, Mountain, road, Planet, forest)

Group II – AME 504

1. Character setup overview
2. Building and posing skeleton
3. Creating Basic Bone System
4. Full body IK and FK
5. Setup joint chain
6. Pose with invers and forward kinematics
7. Skinning
8. Constraint
9. Deformers
10. Weight
11. Rigging Male body
12. Rigging female body
13. Rigging Animal body
14. Rigging Cartoon Character body
15. Rigging Bike and Car

Laboratory course Animation Lab- **II** - 3D Texturing II + 3D Lighting II

(AME 502 + AME 503)

Group I – AME 502

1. UV Mapping Overview
2. Mapping UV,
3. Editing UV
4. UV sets
5. Create UV Texture Layout with simple object
6. painting 3D model textures in digital paint (Photoshop)
7. Applying bump maps
8. Applying Normal Maps
9. Applying Texture for inorganic polygon models- I
   (Lamps, Mobile, Planet, Land with grass texture, rock, atmospheric objects system)
10. Applying Texture for organic polygon models – I (Cartoon, Semi cartoon)
11. Applying Texture for inorganic polygon models - II (Solar system, Car, Bike, Plane,)
12. Applying Texture for organic polygon models - II (Human , Animal)
13. Applying Texture for organic Subdivision models – I (Cartoon, Semi cartoon)
14. Applying Texture for inorganic Subdivision models - II (Solar system, Car, Bike, Plane,)
15. Applying texture for rendering final output with organic and inorganic objects

Group II- AME 503

1. Basics of lighting
2. Create lighting
3. Absorption, reflection and refraction of light
4. Apply and adjust basic direct lighting
5. Position features of a light interactively
6. Mental ray Light Source
7. Final gather and HDRI
8. Shadow in mental ray
9. Basic mental ray Shades
10. Light nodes. Glow nodes
11. Lighting nodes Photon and final gather nodes
12. Working with camera and shadow-casting lights
13. Setting Camera Parameters
14. Render using the Physical Sun and Sky network lights
15. Render contours with Viewing a Scene from a Light

Laboratory course Animation Lab- **III** - 3D Animation II + 3D Rendering II + V.F.X. (AME 601 + AME 602 + AME 603)

Group I- AME 601

1. Basic Animation
2. Key frame Animation
3. Path Animation
4. Animation Nodes
5. Animating Basic 3D Objects
6. Animating Camera
7. Create pose to pose animation
8. Walk cycle
9. Run cycle
10. Using Squash and Stretch
11. Facial Expressions
12. Use of Animation Editor
13. Animating Male, female, animal
14. Animating Plane, Car, Bike
15. Animating Short film Demo with Rendering

Group II- AME 602

1. Shading Surface Relief
2. Background
3. Reflection and Environment
4. Atmosphere
5. Shading Nodes
6. Toon shading
7. Basics of Lighting
8. Lighting nodes
9. Camera set up
10. Quality render speed diagnostics
11. Mental ray for Maya rendering
12. Rendering nodes
13. FCheck
14. Command line renderer
15. Final Render Scene

Group III- AME 603

1. Importing various files
2. Importing sound and video files
3. Compositing sound with effect
4. Compositing video with effect
5. Animate still photos
6. Creating Fire Logo Effect
7. Creating Smoke text effect in after effect
8. Creating energy blast effect in after effect
9. Creating morphing shape in after effect
10. Creating 3D effect in after effect
11. Creating Elegant Light Streaks
12. Creating Lighting effect
13. Creating Advanced Light Rays Effect
14. Creating Particle dance
15. Creating Fire effect

NOTE: - Minimum 10 practicals from each group should be conducted for AME 601, AME 602, and AME 603

PRACTICALS GROUPING

Animation Lab I: 3D Modeling II + 3D Rigging II
Animation Lab II: 3D Texturing II + 3D Lighting II
Animation Lab III: 3D Animation II + 3D Rendering II + V.F.X.
Animation Lab IV: Project work and Industrial Training

EXAMINATION PATTERN

Theory Exam: Semester Pattern
Common Nature of Question paper as per Faculty of Science.
Practical Exam: Annual Pattern (Applicable for all Laboratory Courses)

Nature of Practical question paper for Lab – I, Lab- II, Lab -III

1. **4 questions will be asked**
2. **Out of four questions , shudent have to solve any two**
3. **Each question carries 20 marks**
4. **5 marks for certified journal of each course**
5. **5 mark for oral.**

Q .01	**20**
Q.02	**20**
Oral	**05**
Journal	**05**
Total	**50**

Lab Course –IV

Project Information

10- Marks for industrial training in vacation, 10 days after completion of Semester V

05- Marks for industrial visit / Excursion (Educational Tour) in Semester VI

35- Marks for project

Project Marks Distribution (35) marks

Project Viva - 05

Project Design - 25

Project Report – 05

Note: - Project should be based on modeling, Texturing, Lighting, Rigging, Animation, Rendering and VFX

Nature of Question papers (Theory)

COMMON NATURE OF QUESTION FOR THEORY PAPER MENTIONED SPERATELY: