



CIRCULAR NO.SU/Sci./M.Sc.Net.& Mult. /66/2023

It is hereby inform to all concerned that, the syllabus prepared by the Ad-hoc Board in Networking & Multimedia and recommended by the Dean, Faculty of Science & Technology the Hon'ble Vice-Chancellor has accepted the **New Syllabus of M.Sc. Networking & Multimedia IIIrd & IVth semester** in his emergency powers under section 12(7) of the Maharashtra Public Universities Act, 2016 on behalf of the Academic Council as appended herewith.

This shall be effective from the Academic Year 2022-23 and onwards.

All concerned are requested to note the contents of this circular and bring notice to the students, teachers and staff for their information and necessary action.

University Campus,
Aurangabad-431 004.

REF.NO. SU/Sci/2023/30479-87
Date:- 29.05.2023.

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*Deputy Registrar,
Academic Section.*

Copy forwarded with compliments to :-

- 1] **The Principal of all concerned affiliated Colleges,**
Dr. Babasaheb Ambedkar Marathwada University,
- 2] **The Director, University Network & Information Centre, UNIC,**
with a request to upload this Circular on University Website.

Copy to :-

- 1] The Director, Board of Examinations & Evaluation, Dr.BAMU, A'bad.
- 2] The Section Officer, [M.Sc.Unit] Examination Branch, Dr.BAMU, A'bad.
- 3] The Programmer [Computer Unit-1] Examinations, Dr.BAMU, A'bad.
- 4] The Programmer [Computer Unit-2] Examinations, Dr.BAMU, A'bad.
- 5] The In-charge, [E-Suvidha Kendra], Rajarshi Shahu Maharaj Pariksha Bhavan, Dr.BAMU, A'bad.
- 6] The Public Relation Officer, Dr.BAMU, A'bad.
- 7] The Record Keeper, Dr.BAMU, A'bad.

**DR. BABASAHEB AMBEDKAR
MARATHWADA UNIVERSITY,
AURANGABAD.**



M.Sc. Networking & Multimedia

IIIrd Semester

Course Structure and Curriculum

Under the Faculty of Science & Technology

From the Academic Year 2023-24 & Onwards/-

COURSE CONTENTS (SEMESTER – III)

SEMESTER - III (TH)								
Sr. No.	Subject Code	Title of the Subject	Contact Hours Per Week		Evaluation Scheme (marks)		Total Marks	Credit
			L	P	Internal	External		
1	NMM-301	VFX 3D Compositing	4		20	80	100	4
2	NMM-302	Rigging Artist	4		20	80	100	4
3	NMM-303	3D Animation	4		20	80	100	4
4	NMM-304	Rendering 3D	4		20	80	100	4
5	NMM-305	Elective - II 305.1 Advanced 3D Animation 305.2 Advance 3D Rendering	4		20	80	100	4
6	NMMP-301	Practical based on NMM301		4	10	40	50	2
7	NMMP-302	Practical based on NMM302		4	10	40	50	2
8	NMMP-303	Practical based on NMM303		4	10	40	50	2
9	NMMP-304	Practical based on NMM304		4	10	40	50	2
10	NMMP-304	Practical based on NMM304		4	10	40	50	2
Total					150	600	750	30

3	NMM-403	Project Reviews - 3	-	4	50		50	2
4	NMM-404	Final Dissertations	-	8	-	200	200	4
5	NMM-402	Seminar	-	8	20	80	100	4
Total					170	280	600	14

GENERAL KEY TERMS

CREDITS AND DEGREES

- i) A candidate who has successfully completed all the core courses, Elective/ Specialized courses and, seminars and project prescribed and or optional service courses approved by the University for the program with prescribed CGPA shall be eligible to receive the degree.
- ii) One Credit shall mean one teaching period of one hour per week for one semester (of 15 weeks) for theory courses and two practical / laboratory / field / demonstration hours / week for one semester.
- iii) Every student will have to complete at least 92-96 credits to obtain the master's degree of M. Sc. (Multimedia & Networking) (Post graduate degree)

GRADE AWARDS:

- (i) A ten point rating scale shall be used for the evaluation of the performance of the student to provide letter grade for each course and overall grade for the Master's Program. Grade points are based on the total number of marks obtained by him/her in all the heads of examination of the course. These grade points and their equivalent range of marks are shown separately in Table-I.

Table I: Ten point grades and grade description

Sr. No.	Equivalent percentage	Grade points	Grade	Grade description
1.	90.00-100	9.00-10	O	Outstanding
2.	80.00-89.99	8.00-8.99	A++	Excellent
3.	70.00-79.99	7.00-7.99	A+	Exceptional
4.	60.00-69.99	6.00-6.99	A	Very good
5.	55.00-59.99	5.50-5.99	B+	Good
6.	50.00-54.99	5.00-5.49	B	Fair
7.	45.00-49.99	4.50-4.99	C+	Average
8.	40.01-44.99	4.01-4.49	C	Below average
9.	40	4.00	D	Pass
10.	< 40	0.00	F	Fail

- ii) Nonappearance in any examination/ assessment shall be treated as the students have secured zero mark in that subject examination/assessment.
- iii) Minimum D grade (4.00 grade points) shall be the limit to clear /pass the course / subject. A student with F grade will be considered as 'failed' in the concerned course and he/she has to clear the course by reappearing in the next successive semester examinations. There will be no revaluation or recounting under this system.
- iv) Every student shall be awarded Grade points out of maximum 10 points in each subject (based on 10 Point Scale). Based on the Grade points obtained in each subject, Semester Grade Point Average (SGPA) and then Cumulative Grade Point Average (CGPA) shall be computed. Results will be announced at the end of each semester and cumulative Grade card with CGPA will be given on completion of the course.

Computation of SGPA (Semester grade point average) & CGPA (Cumulative grade point average)

The computation of SGPA & CGPA, will be as below:

- a. Semester Grade Point Average (SGPA) is the weighted average of points obtained by a student in a semester and will be computed as follows

$$SGPA = \frac{\text{Sum(course credits x number of points in concern course gained by the student)}}{\text{Sum(Course Credits)}}$$

or

$$SGPA = \frac{\text{Sum}(C_i \times G_i)}{\text{Sum}(C_i)}$$

Where $C_i \rightarrow$ credit of i^{th} course, $G_i \rightarrow$ grade points secured by the student in i^{th} course

The Semester Grade Point Average (SGPA) for all the four semesters will be mentioned at the end of every semester. The Cumulative Grade Point Average (CGPA) will be used to describe the overall performance of

a student in all semesters of the course and will be computed as under

$$CGPA = \frac{\text{Sum}(\text{all four semester SGPA})}{\text{Total Number of Semester}}$$

The SGPA and CGPA shall be rounded off to the second place of decimal.

Evaluation Method:

Each theory course will be of 100 Marks and be divided in to internal examination (Sessional) of 20 Marks and Semester end examination of 80 Marks. (20+80 = 100 Marks). Each Practical course will be of 50 marks (10+40=50) that is 10 internal marks to be given to the students for his involvement in the practicals through completion of records books, submission of record books etc and 40 marks for external practical examinations. Research project if any, will be of 100 marks.

Internal Evaluation Method

There shall be two mid semester examinations, first based on 40 percent syllabus taught and second based on 60 percent syllabus taught. The setting of the question papers and the assessment will be done by the concerned teacher who has taught the syllabus. Average score obtained out of two mid semester examinations will be considered for the preparation of final sessional marks / grade.

Term end examination and evaluation

- Semester end examination time table will be declared by the departmental committee and accordingly the concern course teacher will have to set question paper, conduct theory examination, conduct practical examination with external expert, evaluate and submit the results in the prescribed format to the university.
- The semester end examination theory question paper will have two parts (20+60 = 80 Marks)
 - a. Part A will carry short question of 2-3 marks (fill in the blanks/ multiple choice questions/ match columns / state true or false / answer in one sentence) as compulsory questions and it should cover entire syllabus. (20 Marks)
 - b. Part B will carry 7 questions out of which there shall be at least one question from each unit, student will have to answer any five questions out of 7
- Semester end Practical examinations will be of 50 marks each and students will be examined by one external and one internal examiner. Seminar and Project work (if any) will be evaluated by the external examiners along with guide.
- The student will receive the statement of marks (Mark sheet) issued by the Examination and Evaluation section of Dr. Babasaheb Ambedkar Marathwada University, Aurangabad based on the his/her assessment scores of examinations.
- Every student shall have the right to scrutinize answer scripts as per the process and rules defined for the Examination and Evaluation section of Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

GRADE CARD

The University shall issue at the beginning of each semester a grade card for the student, containing the grades obtained by the student in the previous semester and his Semester Grade Point Average (SGPA).

The grade card shall list:

- The title of the courses along with code taken by the student
- The credits associated with the course,
- The grade and grade points secured by the student,
- The total credits earned by the student in that semester.
- The SGPA of the student,
- The total credits earned by the students till that semester and
- The CGPA of the student (At the end of the IVth Semester)

CUMULATIVE GRADE CARD

At the end of the IVth semester, the University shall issue Cumulative Grade Card to the Students showing details of Grades obtained by the student in each subject in all semesters along with CGPA and total credits earned

DETAILED COURSE CONTENTS

SEMESTER - I (TH & PR)								
Sr. No.	Subject Code	Title of the Subject	Contact Hours Per Week		Evaluation Scheme (marks)		Total Marks	Credit
			L	P	Internal	External		
General Academic Components								
1	NMM-101	Constitution of India	2	-	20	30	50	2
Skill Development Components								
2	NMM-102	Background Designer	4		20	80	100	4
3	NMM-103	Film Editing & Multimedia	4		20	80	100	4
4	NMM-104	Advance 2D Animation	4		20	80	100	4
5	NMM-105	Basics 3D Animation	4		20	80	100	4
6	NMMP-102	Practical based on NMM102		4	10	40	50	2
7	NMMP-103	Practical based on NMM103		4	10	40	50	2
8	NMMP-104	Practical based on NMM104		4	10	40	50	2
9	NMMP-105	Practical based on NMM105		4	10	40	50	2
Total					150	510	650	25

COURSE CONTENTS (SEMESTER – I)

Component: General

Paper Title: NMM-102 Constitution of India

Paper No. NMM-102

Max Marks: 100 (80-E : 20-I)

Unit I

History of making Indian Constitution: History and Drafting Committee (Composition and Working)

Unit II

Philosophy and Indian Constitution: Preamble, Salient Features

Unit III

Contours of Constitutional rights & duties: Fundamental rights, Rights to Equity, Rights to Freedom, Right against exploitations, Right to Freedom of religion, cultural and educational rights, Right to Constitutional remedies, Directives and Principles of state policy, fundamental duties.

Unit IV

Organs of Governance: Parliament Composition, Qualification and Disqualification, Power and functions, Executive President, Governor, Council of Ministers, Judiciary – Appointment and transfer of judges, qualifications, power and functions

Reference books:

- Constitution of India, 1950 (Bare Act), Government Publications
- Dr. S N Busi, Dr. B R Ambedkar Framing of Indian Constitution, 1st Edition, 2015
- M P Jain, Indian Constitution Law, 7th Edn, Lexis Nexis 2014
- D D Basu, Introduction to India, Lexis Nexis 2014
- M P Jain , Outline of Indian legal and Constitutional History, Lexis Nexis 2014

Component: General

Paper No. NMM-102

Paper Title: NMM-102 Background Designer

Max Marks: 100 (80-E : 20-I)

Learning Objectives:

To provide students with fundamental backgrounds of communicative English.

Course Outcomes:

On successful completion of this module, the student should be able to: • Utilise knowledge gained to design and develop media artefacts with a high quality of layout and graphic design features. • Conceive, create and deliver a range of layout and graphic design media products to a high standard, demonstrating a capacity for critical evaluation and professional competence. • competently construct and present hard-copy promotional material adaptable to multiple formats as requiring using integrated multimedia skills.

UNIT-I

(15 Hrs)

Advanced Photoshop:

Introduction to Blending Modes, Gradients, Working with Layer Styles, image editing, Design Concepts in Black and White, Design using Colour, Selections tools.

UNIT-II

Understanding of Design:

(15 Hrs)

Basic Design, Color Theory, Collage, Sketching, Working Drawing, Plantation Drawing, Basic Drawing of Landscape, Elements of Landscape Design, Light and Shade, Modern Landscape Design.

UNIT-III

(15 Hrs)

Different types of landscapes/Layouts:

The design and develop designs consistent with the creative look on paper, water colour effect, Geographies and historical architecture, study & ground, home, Interior, Exterior layouts & matte painting.

UNIT-IV

(15 Hrs)

Mixing and Composition:

The composition and differences in still and in moving images e.g. in textures, grass, surfaces, Creative Composition, the draw, paint and clean frame-by-frame layouts, represent perspective and three-dimensional spaces. Merging different layers. All advance technique of masking to create matte paint or image manipulation

Reference Books:

- 1) Digital Landscape Technique in Photoshop by Johan wiley
- 2) https://helpx.adobe.com/pdf/photoshop_reference.pdf
- 3) Adobe Photoshop Classroom in a Book by Conrad Chavez (Author)

Practical's on Background Designer

Max. Marks: 50

List of Practical based on Layout Designer:

- Principle of layout designing
- Design rules
- Basic gates layout
- How to use Light and Shade in layout design
- Interior layout
- Exterior layout
- Image manipulation
- Ground Exterior layout
- Matte painting
- Final out put
- Create image collage using different peg images
- Black white to color image
- Create action in photoshop
- Make day view image to night view using different filters and tools

Component: General

Paper No. NMM-103

Paper Title: NMM-103 Film Editing & Multimedia,

Max Marks: 100 (80-E: 20-I)

Learning Objectives:

This film editing course provides an overview of the many techniques used in editing film. Students practice with equipment and programs that modify the data in different ways. They gain practical experience putting film together and making it flow. These courses are taken throughout a degree program, as editing technology.

Course Outcomes:

- Identify continuity editing and montage (discontinuity) editing.
- Understand how and why these techniques are employed to tell a visual story.
- Understand the role and responsibilities of a film editor.
- Execute both continuity and montage (discontinuity) techniques in an in-camera edit exercise.
- Work collaboratively.

Course Contents:

UNIT-I

(12 Hrs.)

Film Editing

Screening of Examples, The Premiere Pro interface features and functions how to import and organize footage basic editing techniques, The Project Panel, The Timeline Panel, The Editing workflow, Create and open projects. Knowledge of media production, communication, and dissemination techniques and methods. knowledge in varied media communication technology

and want to have multiple choices in creative fields such as production and animation, as well as gaming visual experts and consultants can pursue this course for further enhancement of their creative talent.

UNIT-II

(12 Hrs.)

Different transformation property of video & image, create mask for specific object, Color-correction, Add animation and other effects, Add motion to your clips Use of key frame animation to create motion graphic advertisement.

UNIT-III

(12 Hrs.)

Grouping different layers & layer nesting, Add transitions, Sync clips from multiple cameras, using a different audio track, Adding background music & adjusting audio, learn to speed up and freeze-frame footage

UNIT-IV

(12 Hrs.)

Audio editing, Title creation, creating type and graphic effects, Advanced Tilting; Styles Creating Motion Graphic effect. Editing project file of premiere, Add graphic element overlays. Creating a loop in Premiere, Speed-ramping footage.

UNIT-V

(12 Hrs.)

Rendering

The rendering menu, Rendering Basics, Understanding the Max Renderers, Previewing with Active Shade, Using the Rendered Frame Window, Using a background image, Adding effects to a scene, Using the Volume Fog effect, Using Render Elements, Adding Render Effects, Compositing with Photoshop, Video editing with Premiere, Video compositing with After Effects

Reference Book/Link:

Adobe Premiere Pro CC Classroom Book 2018, First Edition, By Pearson

Adobe Photoshop CC Classroom in a Book, First Edition, By Pearson Paperback – 15 June 2018
by Andrew Faulkner

https://help.adobe.com/archive/en/premiere-pro/cs6/premiere_pro_reference.pdf

Practical's on Film Editing

Max. Marks: 50

List of Practical based on Film Editing:

1. Navigating the Interface
2. Importing and Organizing Clips
3. Basic Timeline Editing
4. Three-Point Editing
5. Important Keyboard Shortcuts & Its uses
6. Using the Essential Graphics Panel
7. Color Grading to video clips & key frame
8. Multi-cam Editing
9. Audio Editing
10. Exporting Your Video

Component: General

Paper No. NMM-104

Paper Title: NMM-104 Advance 2D Animation

Max Marks: 100 (80-E : 20-I)

Learning Objectives: After studying this lesson your students will be able to:

- List many terms associated with script writing.
- Write their very own comedy sketches.
- Write their very own short TV ads.

Course Outcomes:

Course Student Learning Outcomes Upon successful completion of this course, students will be able to:

- Identify and execute the proper steps in cartoon production
- Practice studio trends in a production environment
- Calculate and apply appropriate frame rates
- Manipulate animation production equipment
- Create accurate and aesthetically appealing complex CG animation
- Describe characteristics of well-designed and executed animation
- Assess and critique past and current animation trends
- Demonstrate progress in advanced animation skills

UNIT-I**Principles of Animation-I****(12 Hrs.)**

Apply process of animation creation from script to storyboard through layout and key posing to in between, clean-up, lip syncing, and editing. Understand animate user interface & use of basic tools overview.

UNIT-II**Character & background Development****(12 Hrs.)**

The relationship between shape and character design | Focus on building our designs from simple shapes | How shape affects our designs, Use of pen tool & other basic shapes in animate to design character for animate purpose

UNIT-III**Digital Animation****(12 Hrs.)**

Create a new composition, then create elements and basic text. Import bitmap and vector images, Edit the properties of an element, Add key frames to a composition to animate an element, Adding and animating element effects, such as drop shadows, Using the Pin tool to create animations,

UNIT-IV**Motion Graphics, Compositing and Visual Effects****(12 Hrs.)**

Veiling and unveiling elements on the Stage, Editing the duration of an animation – or a composition, Creating a fade, Applying eases, Using the Clipping tool, Creating and working with symbols, Creating interaction in a composition, such as rollover effects and clickable buttons, Keyframe animation in animate.

UNIT-V**Symbols & Twining****(12 Hrs.)**

Different types of symbols & its uses in animate, different frames in animate & its importance. Applying 12 principals of animation in animate. Animating Shapes and Using Masks, Puppet Warping, Layer Parenting and Classic Tweens, Advanced Motion Twining. Adding audio & final rendering.

Reference Books/Links:

- Adobe Animate Classroom in a Book (2021 release) By Russell Chun
- Adobe Animate 2022 for Creative Professionals: Implement Professional Techniques and Create Vivid Animated and Interactive Content with Animate, Book by Joseph Labrecque

Practical's on Advance 2D Animation**Max. Marks: 50****List of Practical based on Advance 2D Animation:**

1. Ball bouncing in place (loop)
2. Simple Character Head Turn
3. Character eye blinking
4. Character jumping over a gap
5. Walk Cycle Animation
6. Run Cycle Animation
7. Car Animation using PNG
8. Lip Sync animation
9. Apply audio to animate character
10. Exporting final edit project

Component: General

Paper Title: NMM-105 Basics of 3D Animation

Paper No. NMM-105

Max Marks: 100 (80-E : 20-I)

Learning Objectives:

After studying this lesson your students will be able to:

- List many terms associated with Animation terminology.
- Render their very own 3d artworks.
- Render their very own animated short.

Course Outcomes:

Course Student Learning Outcomes Upon successful completion of this course, students will be able to:

- Identify and execute the proper steps in Animation production
- Learn to handle studio trends in a production environment
- Learn to handle animation production equipment
- Create aesthetically appealing complex CG animation
- Create characteristics of well-designed and executed animation

UNIT-I

Interface of the Software -I

(12 Hrs.)

Workflows, Pipelines of Production. Core Concepts will be reviewed. The Maya Interface. Simple object creation, manipulation, and animation.

UNIT-II

Introduction to Modelling

(12 Hrs.)

Introduction to Poly modelling. Discuss and approve mechanical objects for modelling assignment

UNIT-III

(12 Hrs.)

Introduction to Texturing

Introduction to Blender shader, different types of shader nodes, Volume Shader, Shading and Texturing.

UNIT-IV

(12 Hrs.)

Introduction to Lighting

Introduction to Lighting, Types of light, Point, Sun, Spot, Area lighting and different parameters of lighting.

UNIT-V

(12 Hrs.)

Introduction to Animation

Introduction to principles of animation, Introduction to rigging, Bones and armatures, Weight painting, Assigning the rig to an object, Animating the object, Animating the object using Armatures.

Reference Books

Blender 2.9 : The beginner guide, by Allan Brito.

Practical on Basics of 3D Animation

Max. Marks: 50

List of Practical based on Basics of 3D Animation:

1. 3D Modelling
2. Texturing Process
3. Lighting Process
4. 3 Point lighting Process
5. Rigging
6. Animation Process
7. Walk Cycle Process
8. Car Animation using Constraints
9. Rendering Process
10. Exporting final project

COURSE CONTENTS (SEMESTER II)

SEMESTER - II (TH)								
Sr. No.	Subject Code	Title of the Subject	Contact Hours Per Week		Evaluation Scheme (marks)		Total Marks	Credit
			L	P	Internal	External		
1	NMM-201	VFX 2D Composition	4		20	80	100	4
2	NMM-202	Advance Lighting & Texturing	4		20	80	100	4
3	NMM-203	Advance Motion Graphic	4		20	80	100	4
4	NMM-204	Roto Artist	4		20	80	100	4
	NMM-205	Elective - I	4		20	80	100	4
5		205.1 User Experience and User Interface Design 205.2 Print Media Graphics						
6	NMMP-201	Practical based on NMM201		4	10	40	50	2
7	NMMP-202	Practical based on NMM202		4	10	40	50	2
8	NMMP-203	Practical based on NMM203		4	10	40	50	2
9	NMMP-204	Practical based on NMM204		4	10	40	50	2
10	NMMP-205	Practical based on NMM205		4	10	40	50	2
Total					150	600	750	30

Learning Objectives:

After studying this lesson your students will be able to:

- This program will prepare both creatively and technically to become a VFX compositor in the film industry.
- Master the skills for the VFX process like roto and roto paint, keying, match moving, and compositing techniques used by VFX studios.

Course Outcomes:

Course Student Learning Outcomes Upon successful completion of this course, students will be able to:

- Master rotoscoping, keying, scripting and lighting techniques.
- Recognize and evaluate key visual effects technologies and how they are used to create advanced visual effects;
- Construct complex visual effects shots incorporating live-action, 2D and 3D generated imagery;
- Compose a shot using multiple render passes created from 3D packages;
- Re-light elements within a composited scene to blend seamlessly with live-action plates;
- Demonstrate and execute delivery guidelines for feature film and television production pipelines.
- Assemble and compose stereoscopic footage for use in a 3D production.

UNIT-I

(12 Hrs.)

Intro to the Motion Picture/VFX Pipeline, Principles of Motion Pictures and VFX, The Origins of Visual Effects, Traditional Animation, Depth and Atmospherics: Identifying Depth and Atmospheric Attributes, Camera, Lights, Color Depth, VFX Concepts, Thinking in Layers,

UNIT-II

(12 Hrs.)

Introduction to VFX Advanced Photoshop for 3D, VFX, and Digital Compositing Photoshop Selection Methods, 2D Visual Effects, Compositing, Rotoscoping, Motion Tracking, and 2D Match moving, 2D Motion Tracking, 2D Match moving, Introducing Roto, Compositing.

UNIT-III

(12 Hrs.)

Rotoscoping, Motion Tracking, and 2D Matchmoving, the Golden Rules of Roto, Introducing Roto, 2D Motion Tracking, , 2D Matchmoving, Isolated Roto for Keying, Roto Applications, 2D Motion Tracking,

UNIT-IV

(12 Hrs.)

How 3D CGI Is Created, VFX Techniques, Basic Integration VFX, CG/VFX Lighting and Integration, 2D Motion Tracking and CG Integration, Analyze the Shot, Elements, and VFX to Be Created, Track the Live Action Background Plate, Fine-tune Color Correct (CC) and Finish Composite Adding Grading, Grain, Atmospherics, Artifacts, and More, Fake Shadows and Reflections

UNIT-V

(12 Hrs.)

VFX Techniques V: Bread and Butter VFX.

Sky Replacements, Day for Night and Summer for Winter, Wire and Rig Removal, Time Ramping, Multi-pass Rendering and Compositing, Digital Matte Paintings and Camera Projections, Film Colorization, Introducing Particle Systems, The VFX Compositor's Checklist.

Reference Books:

1. VISUAL EFFECTS & COMPOSITING by Jon Gress

Practical's on VFX 2D Composition

Max. Marks: 50

List of Practical based on VFX 2D Composition:

- Sky Replacements
- Day for Night and Summer for Winter
- Wire and Rig Removal
- Time Ramping
- Digital Matte Paintings
- 2D Motion Tracking
- Rotoscoping
- Motion Tracking
- 2D Matchmoving
- Color correction for final output

Component: General

Paper No. MMN-202

Paper Title: MMN-202 Advanced Lighting and Texturing

Max Marks: 100 (80-E: 20-I)

Learning Objectives:

After studying this lesson your students will be able to:

- List many terms associated with Lighting and Texturing terminology.
- Render their very own 3d artworks.
- Render their very own animated short.

Course Outcomes:

Course Student Learning Outcomes Upon successful completion of this course, students will be able to:

- Identify and execute the proper steps in Lighting and Texturing
- Learn to handle studio trends in a production environment
- Create aesthetically appealing complex CG environment
- Create characteristics of well-designed and executed environment

UNIT-I

(12 Hrs.)

Introduction to Texturing

Introduction to Blender shader, different types of shader nodes, Volume Shader, Shading and Texturing.

UNIT-II

(12 Hrs.)

Introduction to UV Unwrap

Introduction to UV. Process of UV Unwrapping

UNIT-III

(12 Hrs.)

Introduction to Lighting

Introduction to Lighting, Types of light, Point, Sun, Spot, Area lighting.

UNIT-IV

(12 Hrs.)

Introduction to Lighting Parameters

Different parameters of lighting.

UNIT-V

(12 Hrs.)

Introduction to Advanced Lighting Procedures

Placement of light, Color of light, Three-Point Lighting Setup.

Reference Books

Blender 2.9: The beginner guide, by Allan Brito.

Practical on Advanced Lighting and Texturing

Max. Marks: 50

List of Practical based on Advanced Lighting and Texturing:

- Blender Shader Nodes
- Types of Shader Nodes
- Volume Shader
- UV Map
- UV Unwrapping Process
- Types of Lights
- Different types of lighting
- Color of Lights
- 3 Point Lighting Setup
- Exporting final project

Component: General

Paper Title: Advance Motion Graphic

Paper No. NMM-203

Max Marks: 100 (80-E: 20-I)

Learning Objectives:

Motion graphics plays an important role in any animated video. Adobe After Effects is a comprehensive motion graphics software used to produce visual effects (vfx), motion picture compositing as well as animations. Students will able to: • Identify common visual effects used in motion graphics. Use various techniques for emulating realistic optical effects. Combine techniques to create rich environments. Predict common pitfalls in planning visual effects sequences.

Course Outcomes:

- Compose & articulate conceptual solutions, which appropriately utilize motion graphics.
- To closely explore & demonstrate the relationship between form & content for the purpose of storytelling or advancing a narrative.
- To explore & demonstrate the effects of altered sequence & hierarchy on images & resulting content. Assess appropriate use of technology for a distinct design problem.
- Construct a conceptual framework, storyboard, or plan prior to conceptual Implementation.
- Measure effectiveness of solution based on appropriate use of technology.
- Measure effectiveness of solution based on audience factors.

Course Contents:

UNIT-I

(12 Hrs.)

Motion Graphics: A perspective,

Motion Graphics-Introduction, Difference between Motion Graphics and Animation, Motion Graphics and visual effects, Benefits of Motion Graphics, Motion Graphics in Film and Television, Film titles, Network Branding, Commercial, Public service announcements

UNIT-II**(12 Hrs.)**

Conceptualization assessments regarding audience, research topic, restrictions, Formulation of Idea, Cultivation , Story Board, Animatics.

UNIT-III**(12 Hrs.)**

Animation process Frame by frame, Interpolation, Spatial Interpolation, Visual interpolation, Temporal interpolation.

UNIT-IV**(12 Hrs.)**

Motion Graphics Compositing Blend operation, Keying, Matter, Mask, Alpha Channels, color Correction

UNIT-V**(12 Hrs.)**

The sequential Composition

Sequential Composition, Forms of continuity, Forms of Discontinuity, Continuity and Discontinuity, Montage, Exporting settings to different format.

Reference Book/Link:

Creating Motion Graphics with After Effects by Trish & Shris Mayer

Practical's Based on Advance Motion Graphic**Max. Marks: 50**

List of Practical based on **Advance Motion Graphic**

- Import and arrange images
- Apply basic transformation property on layers
- Create motion poster
- Create motion graphic advertisement using key frame
- Export in different format
- Highlight subject in motion poster

Component: General
Paper Title: Roto Artist

Paper No. NMM-204
Max Marks: 100 (80-E: 20-I)

Learning Objectives:

Rotoscope animation describes the process of creating animated sequences by tracing over live-action footage frame by frame. Though it can be time consuming, rotoscoping allows animators to create life-like characters who move just like people in the real world.

Course Outcomes:

Course Student Learning Outcomes Upon successful completion of this course, students will be able to:

- To Learn basics of rotoscoping
- Learn user interface
- Learn different tools and their workings.
- Learn how to import media.
- Learn how to render final output.

Course Contents:**UNIT-I****(12 Hrs.)**

Introduction to rotoscoping, Fundamentals & essentials of rotoscoping, rotoscoping software user interface, Getting to know the Workflow, Customizing your workspace, Getting started , Setting up a project, Introduction to loader ,Importing and interpreting video and audio

UNIT-II**(12 Hrs.)**

Process for Manual frame by frame Roto, create a matte or mask for an element, adjust roto shape using different tools, Introduction to roto software tools & its uses for roto, transform roto shape using different tools.

UNIT-III**(12 Hrs.)**

Flow area for advance roto, node based rotoscoping software, advantage of node base software, Timeline & its controls to modify roto shape & importance of key frame, Spline editor, Tracking, Motion Blur.

UNIT-IV**(12 Hrs.)**

Extract out to place on a different background, masked out, colors can be changed. Shape feather. Learning the roto for retouch techniques for facial and skin. Understand static object and dynamic object roto – advanced

UNIT-V**(12 Hrs.)**

Learn the industry short cuts to fasten the roto process, Roto to stereo scoping footage, Basics of rendering, How to render files in different formats, Render settings, integrating softwares to get the faster roto and final out

Reference Book/Link:

Rotoscoping: Techniques and Tools for the Aspiring Artist Paperback – Illustrated

Practical's on Advance Roto Artist**Max. Marks: 50**

- List of Practical based on Roto Artist:
- Rotoscope single frame
- Rotoscope frame by frame using different tools
- Change background in composition using roto
- Color correct foreground and background object
- Roto using tracker in software
- Hair roto using different tools
- Use motion blur in roto
- Export roto output in different format

ELECTIVE I (SEMESTER II)**Component: Elective-I (Any one from the options)****Paper No. MMN-205.1****Paper Title: User Experience and User Interface Design****Max Marks: 100 (80-E: 20-I)****Learning Objectives:**

After studying this lesson your students will be able to:

- Understand the concept of User Experience Design (UX).
- Understand the concept of User Interface (UI).

Course Outcomes:

Course Student Learning Outcomes Upon successful completion of this course, students will be able to:

- Solve problems using UX Techniques, Structure and manage the User Requirements for Projects.



- Learn to create personas, journey maps, Empathy map, and wireframes.
- Students Efficiently use Design principles when design user interface for websites or mobile apps.

UNIT I

Basics of User Experience Design:

Define Experience Design, UXD Myths, Need of User Experience Design, Definition, Advantages of UXD, UXD Strategy, Project Objective and Approach, Business Requirements, UXD Elements, characteristics of UXD.

Unit II:

Research Using UX Process:

Exploring the problem, generating ideas, Refining solution, User Research: User interviews, Contextual inquiry, survey, focus group, card sorting, Research Techniques, Personas: what are Personas, why create personas, finding information for personas, Empathy map.

Unit III:

Generating Ideas, Content Management, Business Requirement & Solution to Prototype:

Content strategy, Information Architecture, User researcher, Building a Network of user Advocacy, Current state, Design principles, Design Deliverables, Fidelity, Better Deliverables. Defining to Design, Design principles, Information Architecture, Wire framing, Prototyping, wireframe vs Prototype Usability Testing, feedback.

Unit IV

The Importance & Principals of User Interface:

Defining the User Interface, Importance of good design, Graphical User Interface, Screen Design, color theory, Typography, Imagery, Emphasis, Balance, Alignment, Contrast, Repetition, color, space, Proximity, Hierarchy, Naturalness, Consistency, Friendliness, Clarity, Interaction, Transparency.

Unit V

Elements of user interface design

Input Controls: Checkboxes, Radio buttons, Dropdown lists, List boxes, Buttons, Toggles, Text fields, Date field. **Navigation Components:** Breadcrumb, Search field, Pagination, Slider, Tags, Icons, Image carousel, Informational Components: Tooltips, Icons, Progress bar, Notifications, Message boxes, Modal windows (Pop-up). Containers: Accordion. **Other Elements:** button, card, comment, feed, form, icon, Loaded, Modal, Pagination, Notification, picker, progress bar, Search field, sidebar, slider controls, Stepper, Tab bar, tooltip, Toggle.

Books and References:

1. UNDERCOVER User Experience Design, Cennydd Bowles and James Box New Riders 1st
2. A Project Guide to UX Design, Russ Unger and Carolyn Chandler New Riders 2nd
3. The Essential Guide to User Interface Design: An Introduction to GUI Design Principles and Techniques, Wilbert O. Galitz, WILEY 3rd

Practical on User Experience and User Interface Design

Max. Marks: 50

List of Practical based on User Experience and User Interface Design:

- Design Empathy map for Coffee shop app.
- Create User Persona for E-Commerce Website design.
- Design Journey map for Mobile Banking app.
- Create wireframe structure for music app.
- To study different types of UX Design Research techniques.
- Draw Information Architecture for any E-Commerce app.

- Design any ten UI Design screens for travel booking app.
- Create for mobile app screens animations for any Educational app.
- To study UI Design Principals.
- Add Input Controls, Navigation Components for Educational website.
- Design complete app Interface using UX & UI Techniques.

Component: Elective-I
Paper Title: Print Media Graphics

Paper No. MMN-205.2
Max Marks: 100 (80-E: 20-I)

Learning Objectives:

To understand how to design different types of vector graphics

Course Outcomes:

Course Student Learning Outcomes Upon successful completion of this course, students will be able to:

- To Learn Text effect.
- To Create illustrations
- To Create posters, business cards, flyers etc.

Unit I

Introduction

Workspace, application window, property bar , Docker, Basics of vector graphics, working with multiple drawing, undo, redo, repeat actions, zoom, pan & scroll, viewing mode, palettes menus , status bar, basic Transformations, grouping & combining objects, organizing objects, acquiring images, cropping & rotating, image size & resolution , object & lenses.

Unit II

Color Basics & working with text

color models, color depth, Palette libraries and custom color palette, color styles & harmonics, uniform and fountain fills, two color pattern fills, artistic and paragraph text, text frames, alignments, wrap text, fit text to a path, special characters , symbols, glyphs, text effects, formatting characters, open type font, Manage fonts.

Unit III

Working with shapes & illustrations

Rectangles and squares, Ellipses, circles, arcs, and pie shapes, Polygons and stars, Spirals, Predefined shapes, shape objects, align & distributed nodes, join curves, node types, smudge and smear objects, smooth objects, twirl effect, split objects, trim objects, power clip objects, snap object, group objects, sketching by hand, drawing brush strokes, Drawing objects, Applying effects, Applying color.

Unit IV

Layers & Effects

Basics of layer, layer properties, view layers, pages and objects, find, move & copy layers, Bitmap effects: Adjust, Art Strokes, Blur, Camera, Color transform, contour, distort noise sharpen, texture, transform, vector effect: bevel, blend, block shadow, drop shadow, inner shadow, impact, lens, perspective, special effects, 3d Effects.

Unit V

Pages & Layouts:

Basics of page layout, page background, adding text, adding images, add, duplicate, rename pages, page numbers, pixel grid, and baseline grid, add tables, format tables, merge & split tables, convert table to text, adding images, backgrounds and graphics to table.

Books and References:

1. Corel-CorelDRAW-Graphics-Suite-X6-Guide Book
2. CorelDRAW® 2020 User Guide
3. Corel Draw Training Guide, Satish Jain, BPB Publication.

Practical on Print Media Graphics**Max. Marks: 50****List of Practical based on Print Media Graphics:**

- Design a Visiting Card for IT Company.
- Create Logo Design For E – Commerce Company.
- Design Educational Boucher.
- Design Flyer for Restaurant.
- Design Magazine cover page.
- Create Vector Landscape art
- Design Product package design.
- Draw Vector cartoon character design.
- Design E- Commerce Mobile App Screens.
- Design Movie poster.

COURSE CONTENTS (SEMESTER – III)

SEMESTER - III (TH)								
Sr. No.	Subject Code	Title of the Subject	Contact Hours Per Week		Evaluation Scheme (marks)		Total Marks	Credit
			L	P	Internal	External		
1	NMM-301	VFX 3D Compositing	4		20	80	100	4
2	NMM-302	Rigging Artist	4		20	80	100	4
3	NMM-303	3D Animation	4		20	80	100	4
4	NMM-304	Rendering 3D	4		20	80	100	4
5	NMM-305	Elective - II 305.1 Advanced 3D Animation 305.2 Advance 3D Rendering	4		20	80	100	4
6	NMMP-301	Practical based on NMM301		4	10	40	50	2
7	NMMP-302	Practical based on NMM302		4	10	40	50	2
8	NMMP-303	Practical based on NMM303		4	10	40	50	2
9	NMMP-304	Practical based on NMM304		4	10	40	50	2
10	NMMP-304	Practical based on NMM304		4	10	40	50	2
Total					150	600	750	30

Learning Objectives:

Compositing is the art of combining all the elements of a Visual Effect in one frame, making it look like it was all shot at the same time, under the same lights, with the same camera.

Course Outcomes:

Upon successful completion of this course, students will be expected to:

- apply the fundamental techniques of compositing: transparency, keying, tracking.
- research and analyse current movies (Hollywood / Bollywood) in order to learn the most recent techniques used in VFX.
- fully plan and execute a Visual Effects production, from conception to final execution and compositing.
- build and lead a VFX team in a project.

UNIT-I

Core Concepts

(12 Hrs.)

Introduction to Special Effects, Visual Effects, Schematic difference between special and visual effect, How CGI Helps in building effects, Introduction to 2D, 3D and stereoscopic 3D, Introduction to realism and photorealism, introduction to VFX in Digital Revolution, Film and televisions.

UNIT-II

Introduction AE and Animation

(12 Hrs.)

Introduction to Compositing and After Effects: Fundamental concepts of Compositing, Introduction to the AE Interface & Tools. Basic Animation: Fundamentals of animation, Keyframes & Transform properties, Anchor Point, Keyframe types, Motion Sketch, Smoother, Project Settings & Parameters

UNIT-III

Layer Control and Blending

(12 Hrs.)

Layer Control & Blending: Layer Editing, Stacking, Work Area, Effects & Presets, Transparency A - Mask & Pen tool, Bezier curves, Transparency B - Track Matte, Luma Matte, Stencils. Keying - Import Issues, Footage Interpretation, Key light basics

UNIT-IV

Tracking and Output

(12 Hrs.)

Tracking: Stabilization, 1-point tracking, 4-point tracking, Color Corrections – Alpha painting

UNIT-V

Advanced Concepts

(12 Hrs.)

Modelling for architecture and from reference, Modelling for dynamic geometry. Creating complex textures and multi-texture materials Advanced rendering and shading nodes, Procedural textures Renderer-specific and proprietary materials

Reference Books

Visual Effect and Compositing by O'Reilly Publications ISBN: 9780133812664

Practical on VFX 3D Compositing

Max. Marks: 50

List of Practical based contains at least two problem on each unit. Students are also advised to undertake a small project based on the concepts learned in the course.

Component: General
Paper Title: Rigging Artist

Paper No. NMM-302
Max Marks: 100 (80-E: 20-I)

Learning Objectives:

This program is aimed at training candidates for the job of a "Rigging Artist", in the "Media and Entertainment", Sector/Industry and aims at building the following key competencies amongst the learners.

Course Outcomes:

Upon successful completion of this course, students will be expected to:

- Interpret the script/ brief/ storyboard correctly
- Create rigs for models which could include creating movements of characters (Bends, Stretches, Expressions), Accessories, objects, props, sets, locations, bipeds, quadrupeds
- Test the rigs for proper functioning
- Ensure safe working practices and security risks prevalent in the workplace
- Knowing the people responsible for health and safety and the resources available
- Identifying and reporting risks
- Complying with procedures in the event of an emergency

Unit I

(12 Hrs)

Basic Concepts presented in applied tutorials, Pivot Point Props, Hierarchical animation, Deformation Characters. User CNTRLS

Unit II

(12 Hrs)

Utility nodes and custom attributed, Joints and Skinning, Blend shapes and Set Driven Key

Unit III

(12 Hrs)

Taking those concepts and building your first biped rig. Skeletons: joined or broken rigs and Orient Joint, The rules of skinning and toastie roll (proxy) GEO, Upper and Lower Body, Root.

Unit IV

(12 Hrs)

Feet and knees. Simple, Group based and Joint based feet. Spines: FK, Spline, SDK (Set Driven Key). Arms, elbows and clavicles. Hands: SDK, SDK & Keyable CNTRLS. Eyes, Blinks and a smiles. Master CNTRL and Scale-able rigs.

Unit V

(12 Hrs)

Advanced Topics : OMGimbal Lock, Advanced Controls, Stretchy, Broken Rigs and Dangly Bits, Auto Rigging

Reference Books

Rig it Right! Maya Animation Rigging Concepts, By Tina O'Hailey, Taylor and Fransis Group 2nd edition,

Practical on Rigging Artist

Max. Marks: 50

List of Practical based contains at least two problem on each unit. Students are also advised to undertake a small project based on the concepts learned in the course.

Learning Objectives:

3D is everywhere--video games, movie and television special effects, mobile devices, etc. Many aspiring artists and animators have grown up with 3D and computers, and naturally gravitate to this field as their area of interest. Bringing a blend of studio and classroom experience to offer you thorough coverage of the 3D animation industry, this must-have book shows you what it takes to create compelling and realistic 3D imagery.

Course Outcomes:

Upon successful completion of this course, students will be expected to:

- Serves as the first step to understanding the language of 3D and computer graphics (CG)
- Covers 3D animation basics: pre-production, modelling, animation, rendering, and post-production
- Dissects core 3D concepts including design, film, video, and games
- Examines what artistic and technical skills are needed to succeed in the industry
- Offers helpful real-world scenarios and informative interviews with key educators and studio and industry professionals

Unit I

(12 Hrs)

Introduction, 3D Animation Overview, Defining 3D Animation, Exploring the 3D Animation Industry, Entertainment, Scientific Rationale, The History of 3D Animation. Getting to Know the Production Pipeline, Understanding the Production Pipeline's Components, Working in 3D Animation Preproduction: Idea/Story, Script/Screenplay, Storyboard, Animatic/Pre-visualization, Design

Unit II

(12 Hrs)

Working in 3D Animation Production - Layout, Modelling, Texturing, Rigging/Setup, Animation, 3D Visual Effects, Lighting/Rendering, Working in 3D Animation Postproduction - Compositing, 2D Visual Effects/Motion Graphics, Color Correction, Final Output

Unit III

(12 Hrs)

Using Production Tools, Folder Management and Naming Conventions, Understanding Digital Imaging and Video, Understanding Digital Imaging - Pixels, Raster Graphics vs. Vector Graphics, Anti-Aliasing Basic Graphic-File Formats, Channels, Color Depth or Bit Depth, Color Calibration, Understanding Digital Video, Resolution, Device Aspect Ratio, and Pixel Aspect Ratio, Interlaced and Progressive Scanning Compression.

Unit IV

(12 Hrs)

Frame Rate and Timecode, Digital Image Capture, Exploring Animation, Story, and Pre-visualization, Using Principles of Fine Art and Traditional Animation - Modeling, Texturing/Lighting, Character Animation, VFX, Story Arc, Character, Goal, and Conflict

Unit V

(12 Hrs)

Using Pre-visualization Techniques, Basic Shot Framing, Camera Movements, Editing, Understanding Modeling and Texturing - Modeling Polygons, NURBS, Subdivision Surfaces, Modeling Workflows, Texturing, Shaders, Texture Maps,

Reference Books

3D Animation Essentials – Andy Beane, Wiley Publications

Practical on 3D Animation

Max. Marks: 50

List of Practical based contains at least two problem on each unit. Students are also advised to undertake a small project based on the concepts learned in the course.

Component: General
Paper Title: Rendering 3D

Paper No. NMM-304
Max Marks: 100 (80-E: 20-I)

Learning Objectives:

3D Rendering is an important aspect in visualization of object. The learner must get insights of the various steps involved in the production process covering pre-production, production and post production scenarios. Similarly learner will get first-hand experience with V-Ray software and the elements such as lighting (interior & exterior) mode with essential elements.

Course Outcomes:

Upon successful completion of this course, students will be expected to:

- Learn Insights of steps involved in Pre-Production, Production and Post Production
- Learns Steps involved in 3D Rendering process
- Experience in using V-Ray

Unit I

(12 Hrs)

Pre-Production, Production and Post Production overview, Creating Material and Shaders in V-Ray - Diffuse, Reflection, Refraction, Self-illumination Groups. Bidirectional reflectance distribution function rollout - option rollout, maps rollout, V-Ray Shader and Procedural Maps, V-Ray functions.

Unit II

(12 Hrs)

Cameras and Lighting in V-Ray - Dealing with V-Ray Physical Camera, Depth of Field, Bokeh effects, Sampling and Distortion, Lighting in V-Ray. Rendering in V-Ray - Rendering setup, V-Ray Frame Buffer parameters, Global Switches, Image Sampler, Adaptive Image Sampler, Environment, Color Mapping, Global Illumination, Irradiance Map, Rendering elements.

Unit III

(12 Hrs)

Interior Daylight Pre-Productions - Photo References and Mood Board, Creating Materials for Interior Daylight - Glass Material, Metal Material, Hand Rails, Floor, Ceiling Panel, Ceiling Lights, Walls, Interior Daylight - lighting, finetuning materials, setting up for final rendering

Unit IV

(12 Hrs)

Interior Daylight post productions - adding people, Interior night time pre-productions - photo references and mood board.

Unit V

(12 Hrs)

Exterior Daylight Creating Materials - Pavements, Texturing Metal, Window Glass, Bricks, Polished wood, Exterior Daylight,

Reference Book:

3D Photorealistic Rendering – Interior and Exterior with V-Ray, Jamie Cardoso CRC Press

Practical on Rendering 3D

Max. Marks: 50

List of Practical based contains at least two problem on each unit. Students are also advised to undertake a small project based on the concepts learned in the course.

ELECTIVE II (SEMESTER III)

Component: Elective (Any One from the options provided)
Paper Title: Advanced 3D Animation

Paper No. NMM-305.1
Max Marks: 100 (80-E: 20-I)

Learning Objectives:

3D is everywhere--video games, movie and television special effects, mobile devices, etc. Many aspiring artists and animators have grown up with 3D and computers, and naturally gravitate to this field as their area of interest. Bringing a blend of studio and classroom experience to offer you thorough coverage of the 3D animation industry, this must-have book shows you what it takes to create compelling and realistic 3D imagery.

Course Outcomes:

Upon successful completion of this course, students will be expected to:

- Serves as the first step to understanding the language of 3D and computer graphics (CG)
- Covers 3D animation basics: pre-production, modelling, animation, rendering, and post-production
- Dissects core 3D concepts including design, film, video, and games
- Examines what artistic and technical skills are needed to succeed in the industry
- Offers helpful real-world scenarios and informative interviews with key educators and studio and industry professionals

Unit I

Texturing Workflows, Rigging and Animation - Rigging, Parenting, Pivot Positions, Skeleton System, Forward and Inverse Kinematics, Deformers, Constraints, Scripting, Expressions, The Basic Rigging Workflow, Animation, Keyframe, Graph Editor, Timeline, Dope Sheet Workspace

Unit II

Tracking Marks and Ghosting, FK and IK, Video Reference, The Basic Animation Workflow, Animation Techniques, Understanding Visual Effects, Lighting, and Rendering, Creating Visual Effects - Particles, Hair and Fur, Fluids, Rigid Bodies, Soft Bodies

Unit III

The Basic VFX Workflow - Lighting, Light Types, Light Attributes, Lighting Techniques, Rendering - Basic Rendering Methods, Global Illumination, Advanced Shader Functions, The Basic Rendering Workflow, Comprehensive 3D Animation Packages - CAD, Compositing, Digital Imaging,

Unit IV

3D Specialty, Using Motion Capture, Marker Systems, Marker less Systems, Creating Stereoscopic 3D, Integrating Point-Cloud Data - Providing Real-Time Capabilities, Real-Time Rendering, Real-Time Animation

Unit V

Real-Time Motion Performance, Working in Virtual Studios

Reference Book:

3D Animation Essentials, Andy Beane, ISBN: 978-1-118-14748-1 March 2012 352 Pages

Practical on Elective II (305.1) Advanced 3D Animation Max. Marks: 50

List of Practical based contains at least two problems on each unit. Students are also advised to undertake a small project based on the concepts learned in the course.

Component: Elective (Any One from the options provided)
Paper Title: Advance 3D Rendering

Paper No. NMM-305.2
Max Marks: 100 (80-E: 20-I)

Learning Objectives:

The art of capturing or interpreting reality is one that has been around in one form or another for hundreds of years. a computer graphics artist can use the tools at his or her disposal to create or recreate anything that real life or imagination can conjure up. With the ever increasing hardware power and the availability of feature-rich render engines, such as V-Ray for SketchUp. Student will be provided an opportunity to learn different methods for 3D rendering using VRay.

Course Outcomes:

Upon successful completion of this course, students will be expected to:

- Understand photographic rendering and materials.
- Handle and build complex realistic environment using VRay Lights and materials
- Handle color variation more classy and effective way
- Handle camera and camera shots.

Unit I

(12 hrs)

Introduction – Criteria for good photographic rendering and Materials. Lighting an Interior Daytime Scene – Method for defining vision, the lighting workflow, skylights – using rectangles, testing view shots, using GI skylights, dome lights.

Unit II

(12 hrs)

Lighting an Interior night time scene using IES Lights – lighting process, dealing with blank canvas, adding ambience, layering method for IES lights in VRay, evaluating render, image corrections, VRay Frame buffer.

Unit III

(12 hrs)

Lighting an Exterior Daylight scene – setting SketchUp file, Reference and Observations – sunlight color, skylight color, shadow properties, Ambient occlusion, camera matched exterior, lighting process, tweaking exposure. Using Color temperatures, understanding light decay, causes of color bleeding

Unit IV

(12 hrs)

Creating believable materials – SketchUp materials, Using VRay Standard materials, Light and Material interactions, How reflection, absorption, transmittance works. Importance of R, G and B in digital relam.

Unit V

(12 hrs)

Composition of Camera, Deciding Shot type – Long and Wide Shot, medium shot, close-up shot, high shot, low shot, Aspect Ratio, Dealing with Resolution, focal length impact on composition. Quality Control – Fine tuning of scene, GI solution, working with image sampler controls, improving materials,

Reference Book:

Photographic rendering with V Ray for Sketchup, Brain Bradley, Packt Publications.

Practical on Rigging Artist

Max. Marks: 50

List of Practical based contains at least two problem on each unit. Students are also advised to undertake a small project based on the concepts learned in the course.

COURSE CONTENTS (SEMESTER – IV)

SEMESTER - IV (TH)								
Sr. No.	Subject Code	Title of the Subject	Contact Hours Per Week		Evaluation Scheme (marks)		Total Marks	Credit
			L	P	Internal	External		
1	NMM-401	Project Reviews - 1	-	4	50		50	2
2	NMM-402	Project Reviews – 2	-	4	50		50	2
3	NMM-403	Project Reviews - 3	-	4	50		50	2
4	NMM-404	Final Dissertations	-	8	-	200	200	4
5	NMM-402	Seminar	-	8	20	80	100	4
Total					170	280	600	14

The entire semester of the M.Sc program is exclusively dedicated as internship program. The student is required to complete the internship program in the industry working in the area of Computer Graphics / Animations / film making / VFX / Media and advertising etc. During the internship program, it is necessary for the student to undertake the Major Project work which he/she is required to submit to the university as a final dissertation for partial fulfilment of master degree program. In order to check / monitor the progress made by the student in the major project the course Code NMM-401, 402 and 403 are termed as project reviews and will be conducted with in one month duration and their grading will be maintained internally. These reviews are intended to see the progress made by the student in major project to be submitted as final dissertation for partial fulfilment of Master Degree Program.

The Final Dissertation and Seminar examination will be external examination

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