



MANGALORE UNIVERSITY

NATIONAL EDUCATION POLICY-2020 (NEP-2020)

Curriculum Structures for

Bachelor of Science

Basic and Honours Programmes

With

Animation and Visual Effects Degree Programme

**Syllabus for V and VI Semesters and
Open Elective Courses in Animation and Visual Effects**

U G Board of Studies in Computer Science

Mangalore University

Konaje

MANGALORE UNIVERSITY

Bachelor of Science-Animation and Visual Effects Degree Programme

Preamble:

Media and Entertainment are the most emerging and fast growing industries in India and the whole world is taking notice of the efficiency, skill and talent available in the country in these fields. To aid further growth of these industries, it is extremely important that formal and professional level training programmes and courses are introduced at University and College levels to create highly skilled and trained professionals for this Industry. Animation is an important segment in this Industry and this course is being introduced to train people in the field of animation which is an inherent part of a variety of industries today and find applications in industries even beyond Media and Entertainment.

The data from NASSCOM (Animation & Gaming Report 2007) states that there are approximately 16000 animators in India and majority of these animators are employed gainfully in Mumbai, Chennai, Bangalore, Hyderabad, Pune etc. The lack of skilled people is badly affecting the animation industry. Most studios have projects lined up for the coming years with tight deadlines to keep as most of these projects are from the international market. This situation has forced the industry to look for animation professionals from international markets and many studios are recruiting foreign hands.

The animation business is sidelining the animation education and even after 15 years of existence in India the field is not understood. The existing animation education lacks professional training methodologies which are only available at Higher Education levels and comprises of Private training institutes that are cashing the visible boom in the industry. Some of these establishments can only provide ill trained and insecure artists and technicians which will only compound the problem. A lot needs to be done, at a very fast pace if we have to maintain our competitive edge and deliver content be it films, serials or games. There is a huge market for it as India has yet to discover its appetite for animation, and the world is still hungry for more!

Opportunities and Scopes for professionals and Entrepreneurship in Animation Industries:

Global market: Report on Visual Effects (VFX) Market by Component (Software, Hardware and Services), by Type (Matte Painting, Simulation FX, Compositing, and Others), by Application (Movies, Advertisement and TV Shows): Global Industry Perspective, Comprehensive Analysis, and Forecast, 2017 – 2024” by Zion Market Research. According to the report, global VFX market was valued USD 8,611.79 million in 2017 and is expected to reach around USD 19,985.64 million by 2024, growing at a CAGR (Compound Annual Growth Rating) of approximately 12.78% for the forecast period from 2018 to 2024.

Indian Market:

Indian media and entertainment (M&E) industry grew at a CAGR of 11.61 percent from 2011-2016; and is expected to grow at a CAGR of 13.9 per cent to touch US\$ 37.55 billion by 2021 from US\$ 19.59 billion in 2016. The next 5 years will see digital technologies increase their influence across the industry leading to a sea change in consumer behavior across all segments. The entertainment industry is projected to be more than US\$ 62.2 billion by 2025. With an intent of ushering in an era of conversational computing, Microsoft has released an artificial intelligence chatbot known as Ruuh for Facebook Messenger. The English speaking chatbot is only available to users in India and is to be used for entertainment purposes.

Career / Job Opportunities in Domain Areas:

After completion of the Under Graduate Degree Program students can get job opportunities/placements in the following segments in industry:-

Media and Entertainment , Animation Studios , Post Production Houses (PP) , Broadcast Houses, Game Studios (Game Art), Visual Effects (VFX) for Films and Television, Advertisement Industry , Design Visualization , Architectural /Interior/Landscape Designing , Product Designing/Mechanical Visualization/ Industrial designing 11. Medical Visualization, Set Designing/Exhibition Designing , Apparel/ Fashion Designing , Elearning/ CBT Designing, Web Designing , Graphic Design, 3D Modeler , Animator , Material & Lighting Artist , Action Scripting Programmer , Virtual Reality Artist , Rigging Artist , Compositor , Editor and VFX Artist.

Target Industries: Motion Picture Production, Television Broadcast Production Advertising Medical Animation, Cartoon Animation, Architectural Designs, Interior Designing, Automobile Designing, Fashion Product and accessory Designs ,Video Gaming.

(C4-a) Model Programme Structure for Bachelor of Science (Basic/Hons.) with Practical B.Sc. Animation & Visual Effects

Sem.	Discipline Core (DSC) (Credits)	Discipline Elective (DSE) / Open Elective (OE) (Credits)	Ability Enhancement Compulsory Courses (AECC), Languages (Credits) (L+T+P)	Skill Enhancement Courses (SEC)		Total Credits
				Skill based (Credits) (L+T+P)	Value based (Credits) (L+T+P)	
I	DSC-1 (3+2) DSC-2 (3+2) DSC-3 (3)	OE-1 (3)	L1-1(3), L2-1(3) (4 hrs. each)	Env. Studies (3) (3+0+0)	SEC-1: Digital Fluency (2) (2+0+0)	26/27
II	DSC-4 (3+2) DSC-5 (3+2) DSC-6 (2)	OE-2 (3)	L1-2(3), L2-2(3) (4 hrs. each)	SEC-I: Digital Fluency (2) (1+0+2)	Env. Studies (3) (3+0+0)	27/26
Students exiting the programme after securing 46 credits will be awarded UG Certificate in Disciplines provided they secure 4 credits in work based vocational courses during summer term or internship/Apprenticeship in addition to 6 credits from skill-based courses earned during first year.						
III	DSC-7 (3+2) DSC-8 (3+2) DSC-9 (3)	OE-3 (3)	L1-3(3), L2-3(3) (4 hrs each)	India & Indian Constitution (3)(3+0+0)	SEC-2: Cyber Security /Financial Edu. & Inv.Aw. (2) (2+0+0)	26
IV	DSC-10 (3+2) DSC-11 (3+2) DSC-12 (3)	India & Indian Constitution (3) (3+0+0)	L1-4(3), L2-4(3) (4 hrs each)	OE-3 (3)	SEC-3: Financial Edu. & Inv. Aw/Cyber Security (2) (2+0+0)	26
Students exiting the programme after securing 92 credits will be awarded UG Diploma in Disciplines or inter-discipline provided they secure additional 4 credits and skill based vocational courses offered during the first –or –second-year summer term.						
V	DSC-13 (4+2), DSC-14 (4+2), DSC-15 (4)		DSE-1 (3), Vocational-1 (3)	SEC-4 Employability Skills (3) (3+0+0)		25
VI	DSC-16 (4+2), DSC-17 (4+2), DSC-18 (4)		DSE-2 (3), Vocational -2(3)	*Mini Project (2)		24
Students exiting the programme after 3-years will be awarded UG degree upon securing 136 credits and satisfying the minimum credit requirements under each category of courses prescribed						

*Note: Mini Project : 1. 2 hours Workload shall be allotted to the teachers who are guiding the students for Mini Project.

- The report prepared by the student under the guidance of the identified guide in the college shall be evaluated by two internal examiners. Out of which one of the examiner must be a guide. Mini Project (Evaluated by internal examiners 30:20)

CURRICULUM FOR B.Sc. - ANIMATION AND VISUAL EFFECTS

Semester 1	DSC	Credits	Paper Title
	DSC-1	3+2	Fundamentals of Drawing
	DSC-2	3+2	Traditional and Stop Motion Animation
	DSC-3	3	History of Animation
	OE 1	3	Basics of Graphic Design
Semester 2	DSC	Credits	Paper Title
	DSC-4	3+2	Storyboard and Advanced Drawing
	DSC-5	3+2	2D Digital Animation
	DSC-6	3	Production Design of Animation
	OE-2	3	Advances in Graphic Design
Semester 3	DSC	Credits	Paper Title
	DSC-7	3+2	3D Modeling
	DSC-8	3+2	Rigging & Animation
	DSC-9	3	CGI Production
	OE -3	3	Photography
Semester 4	DSC	Credits	Paper Title
	DSC- 10	3+2	Audio Production
	DSC-11	3+2	Surfacing & lighting
	DSC-12	3	Aesthetics of Video Editing
	OE-4	3	Editing
Semester 5	DSC	Credits	Paper Title
	DSC13	4	Video Compositing
	DSC13-Lab	2	Video Compositing Lab
	DSC14	4	Dynamics
	DSC14-Lab	2	Dynamics Lab
	DSC15	4	Digital Compositing
	DSE -1	3	Ad Film Making
	Vocational-1	3	Career Guidance & Soft skills for 3D artists
	SEC-4	3	Employability Skills
Semester 6	DSC	Credits	Paper Title
	DSC16	4	Advanced Animation
	DSC16-Lab	2	Advanced Animation Lab
	DSC17	4	Advanced Video Compositing
	DSC17-Lab	2	Advanced Video Compositing Lab
	DSC18	4	Project Management
	DSE-2	3	Stereoscopic & Match Moving
	Vocational -2	3	Advanced CGI II
	Mini Project	2	Report/ Dissertation
Semester 7	DSC	Credits	Paper Title
	DSC-19	3+2	Advanced Modeling
	DSC-20	3+2	Advanced Lighting and Rendering
	DSC-21	3	Introduction to Electronic Media
	DSC E -3	3	Film Production management
	Vocational -3	3	Digital Cinematography
	Research Methodology	3	
Semester 8	DSC	Credits	Paper Title
	DSC-22	3	Creative Business Management
	DSC-23	3	Media Ethics and copyright law
	DSC-24	3	Visual Communication
	DSC E -4	3	Case study on animation film production.
	Vocational -4	3	Animation Promotion & Merchandising
	Research Project	6	

FIFTH SEMESTER

Course Code:DSC-13	Paper Title: Video Compositing
CourseCredits:4	Hours of Teaching/Week:4
TotalContactHours:52	FormativeAssessmentMarks:40
ExamMarks:60	ExamDuration:2Hours

COURSECONTENT

Syllabus	Hours
Unit-1	
Introduction to Video Compositing, video compositing and its importance in post-production, Understanding the history and evolution of compositing in film and TV, Working with Compositing Software, Overview of popular compositing software (e.g., Adobe After Effects, Nuke, Blackmagic Fusion) Interface navigation and project setup, Importing and managing media assets.	13
Unit-2	
Basic Compositing Techniques, Understanding layers and compositions, Working with keyframes and animation, Creating simple visual effects (e.g., text animation, basic motion graphics), Key concepts: Alpha channel, layers, masking, and blending modes, Advanced Compositing Techniques, Green screen (chroma key) compositing.	13
Unit-3	
Introduction to rotoscoping, Rotoscoping and masking for complex object isolation, Tracking and matchmoving for integrating elements into live-action footage, Introduction to 3D space within compositing software, Integrating 3D elements into live-action footage, Basic 3D camera movement and animation.	13
Unit-4	
Matte Painting and Digital Set Extensions, Creating virtual environments and extending physical sets using matte painting, Photorealistic set extensions and digital environments. Importance of digital matte painting in modern film making. Understanding color spaces and colour management, Colour correction for seamless integration, Creative colour grading for visual storytelling.	13

REFERENCE BOOKS:

1. Digital Compositing for Film and Video Hardcover – 4 May 2010, by [Steve Wright](#)
2. Professional Digital Compositing: Essential Tools and Techniques- By - author Lee Lanier

Course Code:DSC13-Lab	Paper Title: Video Compositing Lab
CourseCredits:2	Hours of Teaching/Week:4
TotalContactHours:52	FormativeAssessmentMarks:25
ExamMarks:25	ExamDuration:3Hours

PracticeLab

Thefollowingactivitiesbecarriedoutinthelabduringtheinitialperiodofthesemester.

1. Working with Adobe After Effects
2. Alpha channel, layers, masking, and blending modes
3. Working with keyframes and animation
4. Text animation
5. Logo animation
6. Basic motion graphics.
7. Stabilization techniques
8. Rotoscoping and masking
9. Green screen (chroma key) compositing
10. Tracking and matchmoving
11. Matte Painting: Creating virtual environments
12. Color correction and Colour grading.

Course Code:DSC-14	Paper Title: Dynamics
Course Credits:4	Hours of Teaching/Week:4
Total Contact Hours: 52	Formative Assessment Marks:40
Exam Marks:60	Exam Duration: 2Hours

COURSECONTENT

Syllabus	Hours
Unit-1	
Introduction of dynamics in animation, software's used for dynamics forces and fields, setting project and scene, particle system, particle types and attribute, Emitting and controlling particles, using fluid containers, using fields with fluids, Fluid interactions, making flames	13
Unit-2	
Gravity , vortex ,turbulence, filed expressions and manipulation, ncloth properties and attributes, creating and simulating cloth objects, ncloth collisions and nconstrains, modeling cloths for ncloth, using constraints, painting ncloth properties, igniting fuel, smoke creation	13
Unit-3	
Introduction to rigid body dynamics. Creating rigid bodies and constraints, simulating collisions and interactions, creating nparticles to simulate liquids, Creating liquid behavior, Converting nparticles to polygons, Emit nparticles using a texture, scope of dynamic artist in the animation industry	13
Unit-4	
Understanding XGen, animating using dynamic curves, using dynamic curves with IK splines, creating an IK spline handle from the dynamic curve, using forces, Adding hair to a character, applying hair to a surface, Styling hair, painting follicle attributes.	13

REFERENCE BOOKS:

1. Learning Maya - Dynamics Paperback – 1 July 2002, by [Alias - Wavefront](#) (Author)
2. FX Particles and Dynamics in Maya – 2013 - Mike Zugschwert

Course Code:DSC14-Lab	Paper Title: Dynamics Lab
Course Credits:2	Hours of Teaching/Week:4
Total Contact Hours:52	Formative Assessment Marks:25
Exam Marks: 25	Exam Duration: 3Hours

PracticeLab

The following activities be carried out in the lab during the initial period of this semester.

1. Particle Simulation (Fire, Tornado, Rain)
2. Instance Particle
3. Rigid Body Simulation
4. Concept of Soft Body
5. Applications of Goal Tool
6. Dynamics Constraints
7. Collision Reactor
8. Use of fields
9. Fluid Effects (Fire, Water flow, Pond collision)
10. Application of Paint Effects
11. Concept of Cloth Simulation
12. Concept of Fur Simulation
13. Concept of Hair Simulation
14. Creating Fire blast Simulation-Working on shading and color
15. Creating Fire blast Simulation-Creating Debris
16. Creating Fire blast Simulation- Simulation and Rendering

REFERENCE BOOKS:

1. Dariush Derakhshani, Introducing Maya 2009, Sybex; 1 Edition, 2009.
2. Eric Keller, Maya Visual Effects: The Innovator's Guide Sybex; 2 edition. 2013.
3. Learning Maya 7: The Special Effects handbook by Alias Learning Tools, Sybex; 1 edition, 2005.
4. Steve Wright, Compositing Visual Effects, Second Edition: Essentials for the Aspiring Artist, Focal Press; 2 edition, 2011.

Course Code:DSC-15	Paper Title: Digital Compositing
Course Credits:4	Hours of Teaching/Week:4
Total Contact Hours:52	Formative AssessmentMarks:40
Exam Marks:60	Exam Duration: 2Hours

COURSECONTENT

Syllabus	Hours
Unit-1	
Introduction digital compositing, role in post-production, Understanding the compositing pipeline, Introduction to industry-standard compositing software (e.g., Nuke, Adobe premiere, Adobe After Effects, Blackmagic Fusion) Interface orientation and project setup, Importing and organizing assets, Image Generation Pixels, Components and channels, Spatial Resolution, Bit depth Normalized, values Additional Channels, HSV Color Representation, Image Input Devices, Digital image File.	13
Unit-2	
Compression Choosing a File Format Nonlinear Color Spaces, Basic Image Manipulation Terminology Color Manipulations, 3D Transforms Warping Expression Language Filtering Algorithms, Working with layers and blending modes, Layer organization and management, Understanding blending modes and their applications, Creating simple composites using multiple layers,	13
Unit-3	
Matte Image: The integrated Matte Channel, Multi source operators: over, mix, subtract, In, Out, Atop. Masks, compositing with pre multiplied images, color difference method, specialized keying software, Matting techniques: garbage mattes, edge mattes, combining mattes, manipulating mattes, time and temporal manipulations, apparent motion, temporal resolution, temporal artifacts, changing the length or timing of a sequence key framing. Tracking an element into a plate, choosing the feature to track, limiting the search area, human intervention, using tracking curves manually, stabilizing a plate, tracking multiple points,	13
Unit-4	
interface interaction workflow, Media, resolution, aspect ratio, non-square pixels, deciding on a resolution for an aspect ratio, format conversion pipeline, format conversion example, Film formats: 35mm formats, 16mm formats, specialized film formats, lines of resolution, color resolution, gamma, NTSC, Pal, SEACAM, HDTV, other formats, Reference stand-in, clean plates, film stocks, filters, rotoscoping, morphing, Shooting with blue screens, shooting with green screens, Scene continuity, lighting, shadows, lens flares, motion blur, focus, film grain.	13

REFERENCE BOOKS:

1. Ron Brinkmann, The art and science of digital compositing, 2nd Edition, MorganKauffman, 2008.
2. Steve Wright, Digital compositing for film and video, 4th Edition, Focal Press, 2017.
3. Dough Kelly, Digital compositing in depth, Coriolis Group Books, 2000.

Course Code:DSE-1	Paper Title: Ad Film Making
Course Credits:3	Hours of Teaching/Week:4
Total Contact Hours:52	Formative Assessment Marks: 40
Exam Marks: 60	Exam Duration: 2Hours

COURSECONTENT

Syllabus	Hours
Unit-1	
Video advertising: Understanding the role of ad films in advertising and marketing, origin and growth, principles, impact, persuasion process, potential qualities, of advertising, Modern advertising, Structure of advertising, function of different departments of ad agency, use of people in campaign planning.	13
Unit-2	
Advertising research activities, objectives of market analysis, product analysis, SWOT, USP, consumer profile, Motivational research, Campaign: Planning and execution process, Preproduction, production planning, production and post-production stages. Assembling the production team and casting, Location scouting and set design, Budgeting and scheduling for the production	13
Unit-3	
Ad Production: Storyboarding techniques for visualizing the narrative, Direction, Principles of visual storytelling through cinematography, camera types, lens type, camera angles, Types of lighting- 3key, Chroma, outdoor, indoor, differences between indoor and outdoor shoot, aspects, of chroma, shooting, usage of rig, slider, crane, jim jip.	13
Unit-4	
Photography- types of cameras, usage of DSLR, aperture, shutter speed, ISO, exposure, lens and filters, rule of third, DOF, Focus, white balance, types of photography-product, architecture, candid, monochrome and silhouette, image quality and resolution, raw vs. jpeg, HDR, panorama, lighting equipment for photography- flash, strobe light, reflectors, soft boxes, umbrellas.	13

REFERENCE BOOKS:

1. Chunnawala, Advertising theory and practices, Himalaya publishing house- 2011
2. Dennis P. Curtin, Digital Photography, 2004
3. Roy Thompson and Christopher bowen, Grammar of the shot, Focal Press, 2009.
4. Seema Hasan, Mass Communication, principles and concepts, Cbs; 2nd edition, 2013.

Course Code: Vocational-1	Paper Title: Career Guidance and Soft skills for 3D Artists
Course Credits: 3	Hours of Teaching/Week:4
Total Contact Hours: 52	Formative Assessment Marks:40
Exam Marks: 60	Exam Duration: 2Hours

COURSE CONTENT

Syllabus	Hours
Unit-1	
Introduction to 3D Artistry, Types of 3D artists and their roles, Fundamental Artistic Skills. Understanding texturing and UV mapping, Introduction to digital sculpting, ZBrush fundamentals, Key animation concepts, Rigging and character animation basics	13
Unit-2	
Building a strong 3D art portfolio, Showcasing diverse skills and projects, Industry Trends and Tools, Staying updated on industry trends, Exploring emerging software and technologies, Effective communication for artists,, Collaboration and teamwork in creative projects	13
Unit-3	
Balancing creativity with project deadlines, Efficient workflow strategies, Understanding client needs, Presenting and justifying artistic choices, Receiving and providing constructive feedback, Ethical considerations in 3D art, Navigating contracts and agreements	13
Unit-4	
Building a professional network, Participation in conferences and exhibitions, Embracing change in the industry, Exploring various career options in 3D art, Participating in real projects or internships, Developing creative solutions to artistic challenges. Adapting skills to meet market needs, Understanding diverse artistic influences	13

REFERENCE BOOKS:

1. **"The Animator's Survival Kit"** by Richard Williams is a great resource for 3D artists, providing valuable insights into animation principles and techniques.
2. For soft skills, **"How to Win Friends and Influence People"** by Dale Carnegie is a classic that can enhance communication and interpersonal skills, essential for any career.
3. **"Becoming a 3D Artist: The Ultimate Guide to Careers in Computer Animation"** by Derek J. Smith.
4. To develop soft skills, **"Crucial Conversations: Tools for Talking When Stakes Are High"** by Kerry Patterson offers practical advice for effective communication in various situations

SIXTH SEMESTER

Course Code: DSC16	Paper Title: Advanced Animation
Course Credits: 4	Hours of Teaching/Week:4
Total Contact Hours: 52	Formative Assessment Marks:40
Exam Marks: 60	Exam Duration: 2Hours

COURSE CONTENT

Syllabus	Hours
Unit-1	
Introduction to Maya and Animation Basics, Overview of Maya animation editor panel, Key frame animation principles, Understanding the animation timeline, Transformations and manipulators, Graph Editor and Dope Sheet, Advanced Keyframing Easing and interpolation techniques Animation curves and tangents Working with multiple keyframes Expressions for animation control Animating characters and objects	13
Unit-2	
Character Rigging ,Rigging fundamentals, Creating custom rigs, Skeletons and joints, Character skinning and weight painting, Inverse Kinematics (IK) and Forward Kinematics (FK), Character Animation, Character posing and blocking, Body mechanics and character acting, Lip syncing and facial animation, Animation layers and blending, Character animation best practices.	13
Unit-3	
Advanced Animation Tools Maya's animation layers and non-linear animation Constraints and parent-child relationships, Dynamics and simulations (e.g., cloth, hair, particles) Advanced camera animation techniques, Specialized Animation Techniques, Animation for games, Motion graphics and visual effects 2D/3D integration, Scripting for animation automation, Rendering and output for final animations.	13
Unit-4	
Animating for visual effects sequences, Using animation to visualize data and scientific concepts Integrating animation with live-action footage, Understanding motion capture technology and data Cleaning up and enhancing motion capture data for polished results Integrating motion capture with keyframe animation.	13

REFERENCE BOOKS:

1. Animator's Survival Kit, author: Richard Williams.
2. Harold Whitaker and John Halas, Timing for Animation, Focal Press, Oxford, 2002
3. Preston Blair, Cartoon Animation, Walter Foster Publishing Inc., CA, 1995 Edited by Peter Hames,
4. Dark Alchemy, The Films of Jan Svankmajer, Greenwood Press, 1995 John Culhane,
5. Disney's Aladdin – The Making of an Animated Film Hyperion, NY, 1992

Course Code: DSC16-Lab	Paper Title: Advanced Animation Lab
Course Credits:2	Hours of Teaching/Week:4
Total Contact Hours: 52	Formative Assessment Marks:25
Exam Marks: 25	Exam Duration: 3Hours

PracticeLab

1. Keyframe animation principles.
2. Mastering Graph Editor and Dope Sheet
3. Ball with tail animation
4. Flour Sack Animation - Practice weight and pose with expression.
5. Refining character animation
6. Camera animation techniques (pan, tilt, dolly, etc.)
7. Jump, walk cycle and Run Cycle in Maya
8. Character with Prop animation
9. Lip Sinking in Maya
10. Create Crane Animation
11. Application of 3D Walkthrough
12. Vehicle moving in bumpy road animation

REFERENCE BOOKS:

1. Animator's Survival Kit, author: Richard Williams.
2. Harold Whitaker and John Halas, Timing for Animation, Focal Press, Oxford, 2002.
3. Preston Blair, Cartoon Animation, Walter Foster Publishing Inc., CA, 1995 Edited by Peter Hames,

Course Code: DSC-17	Paper Title: Advanced Video Compositing
Course Credits:4	Hours of Teaching/Week:4
Total Contact Hours:52	Formative Assessment Marks:40
Exam Marks:60	Exam Duration: 2Hours

COURSECONTENT

Content	Hours
Unit-1	
Introduction to Nuke and its role in the VFX pipeline, Navigating the Nuke interface, Basic settings, preferences, and project management, Understanding the node-based workflow, Importing and managing media (images, video clips, sequences), Introduction to nodes and their types (Read, Write, Merge, Transform, Color Correction, etc.).	13
Unit-2	
Introduction to nodes and their types (Read, Write, Merge, Transform, Color Correction, etc.), Using viewer nodes for previewing, properties panel and parameters, loading node presets, Color correction and grading techniques, Keying and green screen removal, Rotoscoping and masking, Blending and compositing multiple layers.	13
Unit-3	
mattes and alpha channels, Introduction to 3D space in Nuke, Using the Camera Tracker node for 3D tracking, depth-of-field and parallax effects, particle systems, Simulating fire, smoke, and explosions, Motion graphics and text animation, Lens flares and light effects, Planar tracking and match-moving.	13
Unit-4	
Stabilizing shaky footage, Camera solves for 3D tracking, Refining tracking data, Working with multi-pass renders, Complex node setups and scripting in Nuke, Use of Nuke in post- Production stage, Scope of Visual effect artist in CGI Sector	13

REFERENCE BOOKS:

1. Sze Chianly / Samantha Goh, Digital Compositing with Nuke 101, Fatbars Limited- 2010
2. Ganbar R, NUKE 101. Professional Compositing and Visual Effects – 2011

Course Code:DSC17-Lab	Paper Title: Advanced Video Compositing Lab
Course Credits:2	Hours of Teaching/Week: 4
Total Contact Hours:52	Formative Assessment Marks: 25
Exam Marks:25	Exam Duration: 3Hours

List of Practical:

1. Introduction to Nuke
2. Basic Composite
3. Colour Correction
4. 2D Tracking, 3D Tracking
5. Keying
6. Camera Tracking
7. 3D compositing
8. Warping
9. Stereoscopy Compositing
10. Transformation
11. Paint
12. Camera Projection
13. Warping & Morphing
14. Rotoscoping
15. Gizmo

REFERENCE BOOKS:

1. Sze Chianly / Samantha Goh, Digital Compositing with Nuke 101, Fatbars Limited- 2010
2. Ganbar R, NUKE 101. Professional Compositing and Visual Effects - 2011

Course Code:DSC18	Paper Title: Project Management
Course Credits: 4	Hours of Teaching/Week:4
Total Contact Hours:52	Formative Assessment Marks: 40
Exam Marks: 60	Exam Duration: 2Hours

COURSECONTENT

Syllabus	Hours
Unit-1	
Basic concepts of management-definition, need and scope-management theories, managerial skills and functions - Management in Media organization, Structure, nature and process of management, levels of management.	13
Unit-2	
Organizational structure of print media -Newspaper as a business enterprise and its public service role; Ownership of Newspapers; Sources of revenue of newspapers; Circulation of newspapers; Promoting circulation; Newspaper's policy; Organization; Functions; Duties and responsibilities, Audit Bureau of Circulation (ABC); Advertisement department of a Newspaper; Duties and responsibilities; Different types of advertisement in newspapers: classified and display.	13
Unit-3	
Organizational structure of broadcast media-Radio as a communication tool organizational structure of a radio station-radio economics. TV as a communication tool - ownership patterns-costs and revenues in television industry-TRP-FilmProduction management – pre-production, scheduling, budgeting, financing, controlling, production, post-production.and delivery.	13
Unit-4	
Media convergence-Entrepreneurship – Financial management. Future of media business – Employment opportunities and status of media industry-Advertising management - profit, sales and market share objectives, setting the budget, media selection and media scheduling. Marketing – management – creativity and innovation – internal communication and external communication-Understanding market and factors - audiences – research and analysis, ratings, trends in marketing and selling- FDI in media industry-future trends-scope of media opportunities.	13

REFERENCE BOOKS:

1. Andrej Vizjak and Max Riglster, Media management, Springer, 2003
2. Alan B. Albarran, Sylvia A handbook of Media management and Economics – Lawrence Elbaun Associate Publishers, 2006.
3. William James, Willis and Diane B. Willis, New Directions in Media Management, Routledge, 2006.
4. Agarwala V.B, Gupta V. S.- Handbook of Journalism and Mass Communication – Concept Publishing Company - 2001.

Course Code:DSE-2	Paper Title: Stereoscopic and Match Moving
Course Credits: 3	Hours of Teaching/Week:4
Total Contact Hours: 52	Formative Assessment Marks:40
Exam Marks: 60	Exam Duration: 2Hours

COURSE CONTENT

Syllabus	Hours
Unit-1	
Introduction to Stereoscopic 3D, Basic principles of binocular vision, the history and development of stereoscopic methods and systems, and the various available methods for creating and displaying stereoscopic images, Depth cues, spatial awareness, accommodation/convergence, parallax, Terms, definitions, etymology, Anaglyphic imaging.	13
Unit-2	
Techniques and practices of stereoscopic 3D, exploring the aesthetic, conceptual and technical issues involved in the design and production of 3D images, animations, and immersive experiences, Wheat stone, Brewster, Holmes stereoscopes. Side-by-side vs. super imposed formats, Hardware, technologies and techniques for content creation and playback, perceptual, aesthetic and cognitive issues.	13
Unit-3	
match moving and its importance in VFX and filmmaking, Different types of camera motion (pan, tilt, dolly, zoom, handheld), Principles of camera tracking and object tracking, Understanding 2D tracking and 3D tracking, Tracking markers and feature points, Working with challenging shots (low light, motion blur, etc.). Solving for moving objects in the scene, object tracking.	13
Unit-4	
Incorporating CG elements into live-action scenes, Basics of green screen (Chroma key) compositing, Tracking and integrating actors into CG environments, Tracking shots with fast camera motion, Match moving for animated sequences and motion graphics, Motion tracking on real-world projects	13

REFERENCE BOOKS:

1. The VES Handbook of Visual Effects: Industry Standard VFX Practices and Procedures" edited by Jeffrey A. Okun and Susan Zwerman
2. The Art and Science of Digital Compositing" by Ron Brinkmann.
3. Digital Compositing for Film and Video" by Steve Wright

Course Code: Vocational-2	Paper Title: ADVANCED CGI II
Course Credits: 3	Hours of Teaching/Week:4
Total Contact Hours: 52	Formative Assessment Marks:40
Exam Marks: 60	Exam Duration: 2Hours

COURSE CONTENT

Syllabus	Hours
Unit-1	
High-poly vs. Low-poly modeling, Subdivision surfaces, Trends and Industry Applications, Review of Basic CGI Concepts NURBS modeling, Sculpting techniques (e.g., ZBrush, Mudbox), Advanced 3D Modeling, Organic vs Hard-surface modeling, Complex topology and efficient mesh management	13
Unit-2	
Advanced skeletal systems, Blend shapes and corrective morph targets, Sculpting techniques and tools, Muscle systems , Advanced Texturing and Shading, Procedural vs Image-based Texturing, IK/FK blending, Procedural texture generation, Node-based shading networks, Material layering and blending	13
Unit-3	
PBR (Physically Based Rendering) workflows, Global Illumination, High Dynamic Range Imaging (HDRI), Environment maps and reflections, Realistic lighting setups and scenarios, Particle systems and dynamics, Fluid, smoke, and fire simulations, Cloth, hair, and fur simulations, Rigid body dynamics and constraints, Character acting and emotion	13
Unit-4	
Motion capture integration, Advanced animation tools and workflows, Integration of CGI elements into live-action footage, Green screen techniques and match moving, Particle effects and simulations, Color correction and grading, Ray tracing and ray casting, Image-based lighting, Advanced render settings and optimization, Creating interactive 3D experiences, VR/AR hardware and software integration, User experience and interface design for VR/AR	13

REFERENCE BOOKS:

1. "Digital Lighting and Rendering" by Jeremy Birn - Covers essential aspects of lighting and rendering in CGI.
2. "The Art and Science of Digital Compositing" by Ron Brinkmann - Focuses on digital compositing techniques used in CGI.
3. "Computer Graphics: Principles and Practice" by James D. Foley, Andries van Dam, Steven K. Feiner, John F. Hughes - A comprehensive guide to computer graphics principles

Course Code: Mini Project	Paper Title: Report/Dissertation
Course Credits:2	Hours of Teaching/Week:4
Total Contact Hours: 52	Formative Assessment Marks:
Exam Marks:	Exam Duration: 2Hours

I. GUIDELINES TO EXAMINERS REGARDING VIVA-VOCE

External and internal Examiners shall together conduct viva-voce objectively. To begin with, the finer details about various points contained in the scheme of valuation may be conclusively agreed upon through mutual consultation. During evaluation, a student shall present his/her work through live demonstration of the software application developed as a part of internship. However, if live demonstration is not possible due to the reason that some companies do not divulge source code on account of ownership rights or copyrights, students may be allowed to make PPT presentation of their authentic works. In such cases, candidates shall produce necessary declarations issued by the companies to this effect. However, students shall be enabled to present their work in entirety. The primary objective of evaluation shall be to assess the extent of effort that was put in to meet the objectives of the internship and also to gauge the understanding gained by the students in course of their works.

While evaluating reports, examiners shall scrutinize whether Software Development Life Cycle (SDLC) principles have been consistently followed in their work and the same are documented well in the reports. However, the relative and overall emphasis of these principles to a particular problem domain chosen may be taken into account so that evaluations remain fair and objective.

SCHEME OF ASSESSMENT FOR THEORY EXAMINATION

Question Pattern		Marks
Part-A		
1. Answer any SIX sub-questions(6×2=12)		12
Sub-question	Unit	
a,b	1	
c,d	2	
e,f	3	
g,h	4	
Part-B (Answer any ONE full question from each unit – 12 marks each) (Combination of sub-questions of 3 to 6 marks)		
Unit-1		12
2.		
3.		
Unit-2		12
4.		
5.		
Unit-3		12
6.		
7.		
Unit-4		12
8.		
9.		
Total		60

Common scheme of Practical Examination for I Semester to VII Semester

The practical examination in the concerned subject specified in the I Semester to VII Semester shall be conducted for 50 marks. There shall be two components – Problem solving and execution and Viva voce components. 50 marks can be distributed as follows. Each Practical paper includes Two Parts- PART A and PART B. One question shall be asked in each part.

Sl. No.	Details			Marks	Total
1.	PART A	i.	Problem Solving Approach and Designing	10	20
		ii.	Virtual Tool Designing	5	
		iii.	Demonstration	5	
2.	PART B	i.	Problem Solving Approach and Designing	10	20
		ii.	Virtual Tool Designing	5	
		iii.	Demonstration	5	
3.	Record				5
4.	Viva- Voce				5
Total Marks					50