Maulana Abul Kalam Azad University of Technology, West Bengal
Syllabus of B. Sc. (3D Animation Film Making) CBCS Structure
Effective from academic session 20-21

SEM-1

Sl.	Subject Type	Code	Subject Name	Credits			Total Credits
				L	T	P	
1.	**CC**	B3DAFM 101	INTRODUCTION TO DRAWING	4	0	0	6
		B3DAFM 191	INTRODUCTION TO DRAWING Lab	0	0	2	
2.		B3DAFM 102	ADVANCE DRAWING	4	0	0	6
		B3DAFM 192	ADVANCE DRAWING Lab	0	0	2	
	Elective (Any 1 of GE Basket)						
3.	**GE**	GE1B-01	Mind and Measurement.	5	1	0	6
		GE1B-02	Introduction to Hospitality Industry and major Departments.	5	1	0	6
		GE1B-03	Health Education & Communication.	5	1	0	6
		GE1B-04	Sustainability & Fashion.	5	1	0	6
		GE1B-05	The Yoga Professional.	5	1	0	6
4.	**AECC**	B3DAFM 103	Environmental Science	2	0	0	2
Total Credit							20

SEM-2

Sl.	Subject Type	Code	Subject Name	Credits			Total Credits
				L	T	P	
1.	**CC**	B3DAFM 201	2D ANIMATION (CLASSICAL& DIGITAL ANIMATION)	4	0	0	6
		B3DAFM 291	2D ANIMATION (CLASSICAL& DIGITAL ANIMATION) Lab	0	0	2	
2.		B3DAFM 202	GRAPHIC DESIGNING , AUDIO & VIDEO EDITING	4	0	0	6
		B3DAFM 292	GRAPHIC DESIGNING , AUDIO & VIDEO EDITING Lab	0	0	2	
	Elective (Any 1 from GE Basket)						
3.	**GE**	GE2B-01	Cinema and Other Arts.	5	1	0	6
		GE2B-02	Surface & Soft Furnishings Design Development Techniques.	5	1	0	6
		GEB203	Advertising	4	0	0	6
		GEB293	Advertising Lab	0	0	2	
4.	**AECC**	B3DAFM 203	English Communication	2	0	0	2
Total Credit							**20**

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SEM-3

Sl.	Subject Type	Code	Subject Name	Credits			Total Credits
				L	T	P	
1.	**CC**	B3DAFM 301	CLAY MODELLING & CG MODELING	4	0	0	6
		B3DAFM 391	CLAY MODELLING & CG MODELING Lab	0	0	2	
2.		B3DAFM 302	TEXTURING	4	0	0	6
		B3DAFM 392	TEXTURING Lab	0	0	2	
3.		B3DAFM 303	LIGHTING & COMPOSITING (INTRO TO NUKE)	4	0	0	6
		B3DAFM 393	LIGHTING & COMPOSITING (INTRO TO NUKE) Lab	0	0	2	
	Elective (Any 1 from GE Basket)						
4.	**GE**	GE3B-01	Study of Textiles	5	1	0	6
		GE3B-02	IT Literacy	5	1	0	6
		GE3B-03	Basic Mathematics & Statistics	5	1	0	6
		GE3B-04	Mathematics for Computer Science Part- 1	5	1	0	6
5.	**SEC**	B3DAFM 304	Soft Skill Development	2	0	0	2
Total Credit							**26**

SEM-4

Sl.	Subject Type	Code	Subject Name	Credits			Total Credits
				L	T	P	
1.	**CC**	B3DAFM 401	RIGGING	4	0	0	6
		B3DAFM 491	RIGGING Lab	0	0	2	
2.		B3DAFM 402	PROPS & CHARACTER ANIMATION	4	0	0	6
		B3DAFM 492	PROPS & CHARACTER ANIMATION Lab	0	0	2	
3.		B3DAFM 403	DYNAMICS (VFX)	4	0	0	6
		B3DAFM 493	DYNAMICS (VFX) Lab	0	0	2	
	Elective (Any 1 of GE Basket)						
4.	**GE**	GE4B-01	Operating Systems with Linux	5	1	0	6
		GE4B-02	Entrepreneurship Theory & Practice	5	1	0	6
		GE4B-03	Basics of Computing	5	1	0	6
5.	**SEC**	B3DAFM 404	VISUAL COMMUNICATION	2	0	0	2
Total Credit							**26**

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SEM-5

Sl.	Subject Type	Code	Subject Name	Credits			Total Credits
				L	T	P	
1.	**CC**	B3DAFM 501	PRE-PRODUCTION CONTENT DEVELOPMENT	4	0	0	6
		B3DAFM 591	PRE-PRODUCTION CONTENT DEVELOPMENT Lab	0	0	2	
2.		B3DAFM 502	2D DIGITAL ANIMATION	4	0	0	6
		B3DAFM 592	2D DIGITAL ANIMATION Lab	0	0	2	
	Elective (Any 1 from the list)						
3.	**DSE**		**ELECTIVE**				
		B3DAFM 503	Stop Motion Animation (Experimental)	4	0	0	6
		B3DAFM 593	Stop Motion Animation (Experimental) Lab	0	0	2	
		B3DAFM 504	Digital Photography	5	1	0	6
		B3DAFM 505	Writing &Presentation Skills	5	1	0	6
4.		B3DAFM 581	Group Project (Short Film)	0	0	6	6
Total Credit							**24**

SEM-6

Sl.	Subject Type	Code	Subject Name	Credits			Total Credits
				L	T	P	
1.	**CC**	B3DAFM 601	ACTING FOR ANIMATORS	4	0	0	6
		B3DAFM 691	ACTING FOR ANIMATORS Lab	0	0	2	
2.		B3DAFM 602	ADVANCE CHARACTER ANIMATION	4	0	0	6
		B3DAFM 692	ADVANCE CHARACTER ANIMATION Lab	0	0	2	
3.	**DSE**	B3DAFM 681	Project (Portfolio)	0	0	6	6
4.		B3DAFM 682	Internship	0	0	6	6
Total Credit							**24**

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SEMESTER-1

Paper: INTRODUCTION TO DRAWING

Code: B3DAFM 101

Course Objective: The course is designed to provide an introduction to the fundamental aspects of design, drawing methodologies as well as visual communication. Students will be able to develop a sense of design aesthetics as well as create better processes of design systems. They can understand the form by learning basic shapes, composition and light, perspective figure drawing.

Sl	Course Outcome	Mapped modules
1	Remembering	M1, M2
2	Understanding the course	M1, M2, M3, M4
3	Applying the general problem	M3, M4
4	Analyse the problems	M3, M4
5	Evaluate the problems after analysing	M3,M4
6	Create using the evaluation process	M3, M4

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
M 1	Introduction to Basic Drawing	6	25		
M 2	Introduction to Basic Perspective	8	25		
M 3	Basic Figure Drawing	8	25		
M 4	Masses of the Figure	8	25		
		30	**100**		

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Introduction to Drawing

Total Credit: 4

Total hours of lectures: 30 hours

Sl.	Topic/Module	Hour
1.	**Module 1- Introduction to Basic Drawing:** • Comprehensive introduction to the essentials of drawing • Points and lines- Types, Direction, Quality, lines and outlines, contours, Lines as value, Shapes, Geometric and Rectilinear, Curvilinear and Biomorphic, Abstract, Positive. • Learn the fundamentals of shape • Mastering the art of drawing shapes and achieving a deeper understanding of all forms. • Composition of the forms and working with light and shade.	6
2.	**Module 2- Introduction to Basic Perspective:** • Understanding the basic elements (of perspective & how they work together to create illusion of 3D forms. • The various elements of perspective and composition would enable students to expressively and aesthetically arrange their subjects within the boundaries of a drawing space. • Learn the One-point, Two-point and Three-point perspective principles with practical examples • How to use one & two-point perspective to draw three dimensional objects from your imagination • Have a clear understanding of how to build perspective grids. • Draw objects and environments- interiors and exteriors	8
3.	**Module 3-Basic Figure Drawing:** • Deeper understanding of the curves and lines that make up male and female bodies. • Dynamics of freehand sketching • Line of action, apply the line, C-curve, and S-curve to the figures. • Draw great action poses using gesture drawings • Capture and draw gesture poses properly.	8
4.	**Module 4- Masses of the Figure:** • Scale and Proportion- Human scale, Contrast and Confusion, Ideal Proportion, • Contrast and emphasis- Contrast, Isolation, Placement, Absence of Focal point • Rhythm- Rhythm and motion, Alternating and Progressive Rhythm, Rhythmic Sensation. • Add basic shapes to represent body parts. • Draw an incredible variety of poses, actions, and gestures with the correct relationships between forms.	8

Suggested Readings:

1. Fun with Pencil – Andrew Loomis.
2. Basic figure drawing techniques - Greg Albert
3. Anatomy and Drawing by Victor Perard
4. Andrew Loomis - Figure Drawing For All It's Worth
5. Perspective Made Easy – Ernest R. Norling
6. Learn how to draw - John Hagan

Paper: INTRODUCTION TO DRAWING Lab

Code: B3DAFM 191

Course Objective: The course is designed to provide an introduction to the fundamental aspects of design, drawing methodologies as well as visual communication. Students will be able to develop a sense of design aesthetics as well as create better processes of design systems. They can understand the form by learning basic shapes, composition and light, perspective figure drawing.

Sl	Course Outcome	Mapped modules
1	Remembering	M1, M2
2	Understanding the course	M1, M2, M3, M4
3	Applying the general problem	M3, M4
4	Analyse the problems	M3, M4
5	Evaluate the problems after analysing	M3,M4
6	Create using the evaluation process	M3, M4

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
M 1	Introduction to Basic Drawing	8	40		
M 2	Introduction to Basic Perspective	8			
M 3	Basic Figure Drawing	12	40		
M 4	Masses of the Figure	12			

		40	**80**		

Introduction to Drawing Lab
Total Credit: 2
Total hours of lectures: 40 hours

Sl.	Topic/Module	Hour
1.	**Module 1- Introduction to Basic Drawing:** • Warm up exercises – drawing circles, spirals, curves. • Drawing lines- Types, Direction, Quality, lines and outlines, contours, Lines as value, Shapes, Geometric and Rectilinear, Curvilinear and Biomorphic, Abstract, Positive. • Learn the fundamentals of shape • Mastering the art of drawing shapes and achieving a deeper understanding of all forms. • Composition of the forms and working with light and shade.	8
2.	**Module 2- Introduction to Basic Perspective:** • Creating the basic elements (of perspective & how they work together to create illusion of 3D forms. • Drawing objects like table , chair, bed, vehicles in one & two-point perspective • Draw objects and environments- interiors and exteriors using reference. • Draw objects and environments- interiors and exteriors from imagination	8
3.	**Module 3-Basic Figure Drawing:** • Sketching male and female bodies using gesture line freehand sketching • Line of action, apply the straight line, C-curve, and S-curve to the figures. • Draw great action poses using gesture drawings by applying the line, C curve and S curve to the figures • Capture and draw gesture poses properly.	12
4.	**Module 4- Masses of the Figure:** • Add basic shapes to represent body parts. • Draw an incredible variety of poses, actions, and gestures with the correct relationships between forms.	12

Suggested Readings:

1. Fun with Pencil – Andrew Loomis.
2. Basic figure drawing techniques - Greg Albert
3. Anatomy and Drawing by Victor Perard
4. Andrew Loomis - Figure Drawing For All It's Worth

5. Perspective Made Easy – Ernest R. Norling
6. Learn how to draw - John Hagan

Paper: ADVANCE DRAWING

Code: B3DAFM102

Course Objective: The course is designed to provide learning and application industry-standard drawing techniques. Students will be able to draw realistic and conceptual content with appropriate light or value, shadow texture and form using effective techniques. The students will be able to create drawing just about anything from observation, whether it be people and figures, landscapes, cityscapes, still life and more.

Course Outcome	**Mapped modules**
Remembering	M1, M2, M3, M4
Understanding the course	M1, M2, M3, M4
Applying the general problem	M1, M2
Analyse the problems	M3, M4
Evaluate the problems after analysing	M3, M4
Create using the evaluation process	M3, M4

Module Number	**Content**	**Total Hours**	**%age of questions**	**Blooms Level (if applicable)**	**Remarks (If any)**
M 1	Dynamic drawing of human figure	5	25		
M 2	Detailed Figure Drawing	5	25		
M 3	Composition with Light & Shade	12	25		
M 4	Force Drawing & anatomy	10	25		
		30	**100**		

Advance Drawing
Total Credit: 4
Total hours of lectures: 30 hours

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Sl.	Topic/Module	Hour
1.	**Module 1-Dynamic Drawing of Human Figure:** The students will be able to visualize the figure in the tremendous variety of poses which the body takes in action, poses which plunge the various forms of the body into deep space and show them in radical foreshortening. • Draw the human form from any angle or pose • Pose the human form • Draw male and female figures • Draw the figure without using reference • Have the ability to create a figure from their mind	5
2.	**Module 2- Detailed Figure Drawing:** • Anatomy and structure of the realistic eye, nose, mouth and ear before learning how to accurately draw them, either from imagination or from a subject. • Drafting hair and drapery • Detailed figure of human, animal and birds including gesture, line, block-in, structural drawing, and applying tone or value • Drawing the expression sheets (facial, mouth chart, full body)	5
3.	**Module 3- Composition with Light & Shade:** • Rules of "composition" • Understanding the concepts of perspective as a tool in visual content creation • Application of the knowledge concerning light and shade, composition, spatial usage, and so on • Observe & Draw realistic light and shadow • Draw Landscape • Draw backgrounds – (Foreground, mid ground & Background) • Pencil Rendering Color – Still Life • Texturing , Scene Composition (including character) • How to bring your drawings to life with detail and texture.	12
4.	**Module 4- Force Drawing and Anatomy:** • Introduction to Action Drawings • Forceful Shape and form (Humans, Animals , Birds) • Exploring the different facets of motion and the human body. • Basics of proportions, and how to simplify the skeleton. • Drawing the skeleton and learning where all the muscles attach, which is key to drawing figures from imagination. • Stresses the function of each body part and how gravity relative to different poses affects the aesthetics and form of muscle. • Drawing realistic figures from imagination.	10

Suggested Readings:

1. Dynamic Figure Drawing by Burne Hogarth.
2. Force Drawing by Michael Matisse.

3. Classic Human Anatomy in Motion_ The Artist's Guide to the Dynamics of Figure Drawing
4. Ken Hultgren - The Art of Animal Drawing
5. Drawing Animals – Victor Ambrus
6. Force_ Animal Drawing_ Animal locomotion and design concepts for animators
7. Animation Background & Layout – Mike S. Fowler

Paper: ADVANCE DRAWING Lab

Code: B3DAFM 192

Course Objective: The course is designed to provide learning and application industry standard drawing techniques. Students will be able to draw realistic and conceptual content with appropriate light or value, shadow texture and form using effective techniques. The students will be able to create drawing just about anything from observation, whether it be people and figures, landscapes, cityscapes, still life and more.

Course Outcome	Mapped modules
Remembering	M1, M2, M3, M4
Understanding the course	M1, M2, M3, M4
Applying the general problem	M1, M2
Analyse the problems	M3, M4
Evaluate the problems after analysing	M3, M4
Create using the evaluation process	M3, M4

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
M 1	Dynamic drawing of human figure	5	40		
M 2	Detailed Figure Drawing	10			
M 3	Composition with Light & Shade	10	40		
M 4	Force Drawing & anatomy	15			
		40	**80**		

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Advance Drawing Lab

Total Credit: 2

Total hours of lectures: 40 hours

Sl.	Topic/Module	Hour
1.	**Module 1-Dynamic Drawing of Human Figure:** • Drawing human poses from any angle or pose • Posing the human form • Drawing detailed male and female figures • Draw human figure without using reference	5
2.	**Module 2- Detailed Figure Drawing:** • Anatomy and structure of the realistic eye, nose, mouth and ear before learning how to accurately draw them, either from imagination or from a subject. • Drafting hair and drapery • Detailed figure of human, animal and birds including gesture, line, block-in, structural drawing, and applying tone or value • Drawing the expression sheets	10
3.	**Module 3- Composition with Light & Shade:** • Drawing Landscape • Draw backgrounds – (Foreground, mid ground & Background) • Pencil Rendering Color – Still Life • Texturing , Scene Composition (including character) • How to bring your drawings to life with detail and texture.	10
4.	**Module 4- Force Drawing and Anatomy:** • Action Drawings • Forceful Shape and form (Humans, Animals , Birds) • Exploring the different facets of motion and the human body. • Basics of proportions, and how to simplify the skeleton. • Drawing the skeleton, attaching muscles, which is key to drawing figures from imagination.. • Drawing realistic figures from imagination.	15

Suggested Readings:

1. Dynamic Figure Drawing by Burne Hogarth.
2. Force Drawing by Michael Matisse.
3. Classic Human Anatomy in Motion_ The Artist's Guide to the Dynamics of Figure Drawing
4. Ken Hultgren - The Art of Animal Drawing
5. Drawing Animals – Victor Ambrus
6. Force_ Animal Drawing_ Animal locomotion and design concepts for animators
7. Animation Background & Layout – Mike S. Fowler

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Paper: ENVIORNMENTAL SCIENCE

Code: B3DAFM 103

Course Objective: The course is designed to facilitate students' understanding of complex environmental issues from a problem-oriented, interdisciplinary perspective. They will understand core concepts and methods from ecological and physical sciences and their application in environmental problem-solving. It will bring about an awareness of a variety of environmental concerns. It will attempt to create pro-environmental attitude and behavioural pattern in society that is based on creating sustainable lifestyles.

Course Outcome	Mapped modules
Remembering	M1, M2, M3, M4
Understanding the course	M1, M2, M3, M4
Applying the general problem	M1, M2
Analyse the problems	M4
Evaluate the problems after analysing	M3, M4
Create using the evaluation process	M3, M4

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
M 1	Basic concepts of Environmental Science	3	10		
M 2	Environment-civilization interface	3	15		
M 3	Ecosystems	3	15		
M 4	Environmental ethics	4	25		
M 5	Current environmental issues in India	3	15		
M 6	Concept of Sustainability	4	20		
		20	**100**		

Environmental Science
Total Credit: 2
Total hours of lectures: 20 hours

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Sl.	Topic/Module	Hour
1.	**Basic concepts of Environmental Science**: • Concept of environment; Principle and scope of environmental science; • Multidisciplinary approach of environmental science; • Basic concepts and genesis of global environmentalism; Environmental education and awareness; • Environmental ethics and global imperatives; • Anthropocentric environmental view.	3
2.	**Environment-civilization interface**: • Human society and settlement; • Process of cultural transmission; • Gradual social changes in relation to environment; • Nature vs. Nurture; • Global environmental problems and initiatives; Global and Indian context of demography.	3
3.	**Ecosystems:** • Concept of an ecosystem, introduction, types, characteristic features, structure and function of the following ecosystems:-Forest ecosystem, Grassland ecosystem, Desert ecosystem, Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, and estuaries), producers, consumers and decomposers, energy flow in the ecosystem, ecological succession, food chains, food webs and ecological pyramids.	3
4.	**Environmental ethics:** • Issues and possible solutions Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust, Wasteland reclamation, Consumerism and waste products, • Environment Protection Act, • Air (Prevention and Control of Pollution) Act, • Water (Prevention and control of Pollution) Act, Wildlife Protection Act, • Forest Conservation Act, • Issues involved in enforcement of environmental legislation, Public awareness.	4
5.	**Current environmental issues in India:** • Environmental movements and related issues in India-Bishnoism, Silent valley movement, Narmada Dam, Teheri Dam, Almetti Dam, River Linking, • Joint Forest Management, • Chipko movement, Apikko movement, • River cleaning initiatives; • Ecological restorations: case studies from Ramsar wetlands and mines; Waste land and their reclamation; Desertification and its control.	3
6.	**Concept of Sustainability:** • Sustainability indices; • Strategies and debates on sustainable development;	4

	• Concept of Sustainable Agriculture; India's environment action programme: issues, approaches and initiatives towards Sustainability; • Sustainable development in practice; • Urbanization; Urban sprawling and urban growth; Concept and characteristics of smart city; Urban resources and environmental problems; Carrying capacity analysis; Concept of ecological footprints.	

FIELD WORK

1. Visit to a local area to document environmental assets river/forest/grassland /hill/Mountain
2. Visit to a local polluted site-Urban/Rural/Industrial/Agricultural
3. Study of common plants, insects, birds.
4. Study of simple ecosystems-pond, river, hill slopes, etc.

Suggested Reading:

1. Erach Bharucha (2013), Textbook of Environmental Studies for Undergraduate Courses Second Edition, Hyderabad: UniversitiesPress.
2. C.R.Townsend, M.Begon&J . L . Harper (2008), Essentials of Ecology Third Edition, United Kingdom, Oxford: Blackwell Publishing.
3. H.V.Jadhav &V.M.Bhosale (2006), Environmental Protection & Laws, Mumbai: Himalaya Publishing House.
4. B.B.Singh (2016), Objective Environmental Sciences, Ramesh Publishing House.
5. N.Arrumugam, V.Kumaresan, Enviornmental Studies
6. Asthana D.K., Asthana Meera (2010), A Textbook of Environmental Studies, S Chand.

GENERAL ELECTIVE (Any 1 from the 4)

Course Name: Mind and Measurement
Course Code: GE1B-01

Mode- Offline/ Blended

Course Objectives: The course has been designed to explore the emotional and motivational states of mind along with knowledge and application of higher cognitive functions. The learner will be able to apply the knowledge of cognition, conation and effect on the human psyche in the context of personal and professional domains and make a relation between brain and body through the understanding of Human Physiology, various psychological processes and changes throughout the lifespan of humans.

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)

Module1	Define Emotion and Physiological correlates of emotion: Electrical, Circulatory changes, Respiration and Peripheral measures. The role of Cortex in Emotions. Concept of Homeostasis.	5	15	2	
Module2	Theories of Emotion : James-Lange; Cannon-Bard, Lindsay, Schachter-Singer, and Lazarus	8	20	2	
Module3	Understanding the concept of Motivation in connection to its role in education and physiological basis of hunger, thirst.	8	20	2	
Module4	Theories of Motivation – Maslow, McClelland,Murray. Application, Nature of thinking; Inductive and Deductivereasoning; Problem solving approaches	10	15	2	
Module5	Assessment of the different span of attention-sustained attention (digit vigilance test) test of divided attention (triad) test of focused attention (trail making)	12	15	2	
Module6	Interpretation and practical application of memory, learning and forgetting using - whole vs part learning, spaced vs un-spaced learning,retroactive inhibition, pro-active inhibition. Learning curve,	15	15	1,2	
		58	100		

Sl	Course Outcome	Mapped modules
CO1	Explaining the concept and the physiological correlates of emotion.	(M1) BL2
CO2	Understanding the different theoretical aspects of emotion.	(M2) BL2
CO3	Explaining the concept and the physiological correlates of motivation.	(M3) BL2
CO4	Understanding the different theoretical aspects of motivation.	(M4) BL2
CO5	Labeling different span of attention.	(M5) BL2
CO6	Assessment of memorization capacity	(M6) BL1, BL2

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Paper Code: GE**1B-0**1

Mind and Measurement

Total Credit: 6

Detailed Syllabus

Module 1- Define Emotion, Nature, Impact & Expression. Physiological correlates of emotion: Electrical, Circulatory changes, Respiration and Peripheral measures. The role of Cortex, Hypothalamus & Limbic System in Emotions. Concept of Homeostasis. Kluver-BucySyndrome. **Total Hours: 5**
Module 2- Theories of Emotion: James-Lange Theory of Emotion; Cannon-Bard Thalamic Theory of Emotion, Activation Theory of Emotion by Lindsley, Two Factor Theory by Schachter-Singer, and Cognitive Appraisal Theory of Lazarus: Concept, Research Evidence, Implication, Critical Appraisal for each theory Total Hours: 8
Module 3- Understanding the concept of Motivation, Drive, Need, Impulse in connection to its role in education, physiological basis of hunger, thirst: mechanisms within the system with neurobiological underpinning & special emphasis on research evidence. **Total Hours: 8**
Module 4- Theories of Motivation – Need Hierarchical Theory by Maslow, Achievement Motivation Theory by McClelland, Theory of Psychogenic Needs by Murray: Concept, Research Evidence, Implication, Critical Appraisal for each theory, Application, Nature of thinking; Inductive and Deductive reasoning; Problem solving approaches **Total Hours: 10**
Module 5- Practicum Assessment of the different span of attention- sustained attention (digit vigilance test)Test of divided attention (triad) Test of focused attention (trail making) **Total Hours: 12**
Module 6-Practicum Interpretation and practical application of memory, learning and forgetting using - whole vs part learning, spaced vs un-spaced learning, retroactive inhibition, pro-active inhibition. Learning curve **Total Hours: 15**

Suggested Readings

- Morgan, C. T., King, R. A., Weisz, J. R., &Schopler, J. (2006). Introduction to Psychology, 7th eds.
- Fredrickson, B., Loftus, G. R., Lutz, C., & Nolen-Hoeksema, S. (2014).

Atkinson and Hilgard'sintroduction to psychology. Cengage Learning EMEA.

- Schultz, D. P., & Schultz, S. E. (2020). *Psychology and work today*. Routledge.
- Woodsworth, R. S., & Schlosberg, H. (1954). Experimental psychology (Rev. ed.). *New York: Holt*

Course Name: Introduction to Hospitality Industry and Major Departments

Course Code: GE1B-02

Mode- Blended

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Course Objective: The course is designed to provide overall concept of a hotel operation, the major operating departments, hierarchy, job profiling, functions and relation amongst the departments.

Sl	Course Outcome	Mapped modules
1	Understand hospitality industry and relationship withtourism.	M1, M2
2	Understand basic front office operation.	M2, M1
3	Understand basic Housekeeping operation	M2, M3
4	Understand the importance of safety and hygiene.	M2.M3.M4
5	Understand the basic F &B service operation.	M1 ,M5
6	Understand & demonstrate menu and types of service	M5 ,M6

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
M 1	Introduction to hospitality	6	10	1,2	
M 2	Basic Front office operation	12	15	2,3	
M 3	Basic Housekeeping operation	12	15	2,3	
M 4	Safety and hygiene	06	20	2,3	
M 5	Basic F&B service operations	12	20	3,4	
M 6	Menu and types of service	12	20	3,4	
		60	100		

Paper Code: GE**1B-0**2

Introduction to Hospitality Industry and Major departments

Total Credit: 6

Detailed Syllabus:

Module 1 – Introduction to Hospitality Industry: Characteristics of Hospitality Industry and relation with Tourism, Types and Classification of Hotels, Departments in Hotels like Front Office, House Keeping, F&B Service and non-revenue earning departments and their co-ordination. (06 hours)

Module 2 – Basic Front Office Operations: Organizational chart of Front Office department with duties and responsibilities of staff, Types of guest room, basis of charging tariff, meal plans, type of guests, responsibility of Front Office department, Procedures in Front Office, Pre-registration, registration procedures, Bell-desk, Concierge, Cahier, Night Audit. Registration procedure, Role-play for check-in checkout procedures. Sanitization procedures. (12 Hours)

Module 3 –Basic Housekeeping Operations:Organizational chart of House Keeping department with duties and responsibilities of staff, responsibility of House Keeping department, Layout of Guest room, Guest supplies and amenities, Floor and Pantry, Room cleaning procedures, key control, lost and found procedures, forms formats and registers in Housekeeping, functions of House Keeping control desk. Role-play for complain handling and various services. (12 Hours)

Module 4 – Safety and Hygiene: Importance of Safety and Hygiene, Sanitization techniques for guest, hotel personnel, offices, Guest rooms and Public areas, Liaison with Public health department, Accidents, Fire, and security. Concept of First aid and artificial respiration (06 Hours)

Module 5 – Basic F&B Service Operations: Organizational chart of F&B Service department with duties and responsibilities of staff, responsibility of F&B Service department, Attributes of personnel, Equipment and Service ware uses care and maintenance, Types and Layout of F&B Service areas, basic menu knowledge and types of service. (12 Hours)

Module 6 –Menu and types of Service: Basic concept of Menu, restaurant and Coffee Shop Layout, the concept of stations, numbering the tables and covers at a table, reservation systems in restaurants, records & registers maintained by a Restaurant, rules to be observed while laying and waiting at the table, Dos & don'ts of waiting staff in F&B service operations, organizing the staff for service. (12 Hours)

Suggested Readings:

- Hotel Housekeeping, Sudhir Andrews, Tata McGraw Hill
- The Professional Housekeeper, Tucker Schneider, VNR
- Professional Management of Housekeeping Operations, Martin Jones, Wiley
- House Keeping Management for Hotels, Rosemary Hurst, Heinemann
- Front office operations by Colin Dix &Chirs Baird
- Hotel Front office management by James Bardi
- Managing front office operations by Kasavana& Brooks
- Food & Beverage Service -Lillicrap& Cousins
- Modern Restaurant Service -John Fuller
- Food & Beverage Service Management-Brian Varghese
- Introduction F& B Service-Brown, Heppner & Deegan
- Professional Food & Beverage Service Management -Brian Varghese

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Course: Health Education and Communication

Course Code: GE1B-03

Mode- Offline/ Blended

Course Objective The course is designed to provide basic knowledge about the health and health communication. The students will be able to use information, communication and education across media for the public towards ensuring equitable access to health for both prevention and cure.

Sl	Course Outcome	Mapped modules
1	Explain the concept of health and the knowledge of health education in society.	M1
2	Apply the modern technology in health care sectors.	M2
3	Describe the different model of communication.	M3
4	Develop the communications to the different field of society.	M4
5	Able to use the computer as a tool in health care.	M5
6	Understand how to aware the people about the health.	M6

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
M 1	Concept Of Health And Health Education	16	20	L1, L2	
M 2	Health Education & Artificial Intelligence	8	10	L1, L2	
M 3	Heath Communication	10	10	L1, L2	
M 4	Mass communication and role of media	8	10	L1, L2	
M 5	Tools used for communication	8	30	L1, L2	LAB
M 6	Presentation on concept of health and health education	10	20	L1, L2	LAB
		60	100		

Paper Code: GE**1B-0**3

Health Education and Communication

Total Credit: 6

Detailed Syllabus:

Module 1- Concept of Health and Health Education: 16h

Definition of physical health, mental health, social health, spiritual health determinants of health, indicatory of health, concept of disease, natural history of diseases, the disease agents, concept of prevention of diseases.

Health Education: Principles & Objectives, Levels of Health Education, Educational Methods, Evaluation & practice of Health Education in India.

Family planning: Demography and family planning: Demography cycle, fertility, family planning, contraceptive methods, behavioural methods, natural family planning methods, chemical methods, mechanical methods, hormonal contraceptives, population problem of India.

Module 2-Health Education & Artificial Intelligence: 8h

Changes in the workforce, Robots, assisting the human experts or completely robotic diagnosis, Medical training: to train paramedical students, AI can play a big role, Virtual health assistants, advanced health research, Clinical and administrative task handling.

Module 3-Heath Communication: 10h

Basic Concept & Principles of Communication, Definition, Purpose, Types of Communication, Communication Process, Directions of Communication: Upward, Downward, Lateral, Factors influencing Communication, Barriers of Effective communication, How to overcome the Barriers Models of communication: Aristotle Model, Shannon and Weaver model, Schramm Model, Laegans Model, Fano Model, Literer's Model, Westly Maclean's Model.

Module 4- Mass Communication and Role of Media: 8h

Mass communication & Role of Media in health education, Information Communication Technologies (ICT) in health care and awareness. (Telemedicine & e-health, community radio) Future trends in information and communications systems:

Module 5: Tools Used for Communication 8h

Introduction to PC Operating System and MS office package - Windows 10/Ubuntu, MS Office 2016

/ Office360 (MS Word, MS Excel, MS PowerPoint, MS Outlook, Internet and Email)

Module 6: Presentation on Concept of Health and Health Education 10h

Reference Books:

1.Health Education – A new approach – L. Ramachandran & T. Dharmalingan

2.Health Communication in the 21st Century, By Kevin B. Wright, Lisa Sparks, H. Dan O'Hair, Blackwell publishing limited, 2013,
3.Health Communication: From Theory to Practice, By Renata Schiavo, Published by Jossey Bash.
4.Health Communication, R.D. Karma Published by Mohit Publications 2008.
5.Counseling Skills for Health Care Professionals, 1st Edition, Rajinikanth AM, Jaypee Brothers, 20

Course Name-**Sustainability & Fashion**

Course Code-GE**1B-0**4

Mode- Offline/ Blended

Course Outcomes (CO):

Sl	Course Outcome	Mapped modules
1	Remember & Understand Environmental, Sustainable & Ethical issuesbeing faced today and their causes	M1
2	Remember & Understand the Role of sustainable, ethical and environmental organizations	M2
3	Remember & Understand the innovation in sustainable thinking for the future	M3
4	Remember & Understand the roles and impact designers have on thenatural resources and the environment	M4
5	Remember & Understand the renewable & non-renewable energy	M5
6	Remember & Understand the possibilities in sustainable and ethical fashion	M6

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
M1	Environmental & Sustainability Issues	10	20	1,2	
M2	Sustainable & Ethical focused Organizations	8	14	1,2	
M3	Innovations in sustainable thinking for the future	8	14	1,2	
M4	Resource consumption and depletion	8	16	1,2	
M5	Renewable Energy Vs. Non-Renewable Energy	10	16	1,2	
M6	Fashion Design & Sustainability	10	20	1,2	
		60	**100**		

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Paper Code: GE**1B-0**4
Sustainability & Fashion
Total Credit: 6
Detailed Syllabus:

ModuleI (10 Hours)

Environmental & Sustainability Issues: Climate Change & Global Warming, Pollution, Resource depletion, Consumerism and the throw-away society,

ModuleII (8 Hours)

Sustainable & Ethical focused Organizations, bodies and Agencies: Greenpeace, Earth day Network, Ethical Fashion Forum, United Nations, Fair Trade, World Wildlife Fund (WWF)

ModuleIII (8 Hours)

Innovations in sustainable thinking for the future: UN Sustainable Development Goals, The Paris Climate Agreement, Ocean Clean-Up

Module IV (8 Hours)

Resource consumption and depletion: Deforestation, Fossil Fuels, Sand, Minerals, Precious Stones & Metals

ModuleV (10 Hours)

Renewable Energy Vs. Non-Renewable Energy: Impact of non-renewable i.e. traditional fossil fuel based energies, Renewable energy systems and technology innovations, Sustainable energy schemes and initiatives in India

Module VI (10 Hours)

Fashion Design & Sustainability: Sustainable Fashion design concepts, Sustainable materials for fashion and an understanding of the impacts of our materials choices, Future trends within sustainable fashion, an overview of the key issues the fashion and textiles industry faces, Discussion on the impact of new emerging technologies

Suggested readings:

1. Introduction to Sustainability Paperback – 2016 by Robert Brinkmann

2. Sustainability in Interior Design Book by Sian Moxon

3. References:

1. Centre for Sustainable Fashion- www.sustainable-2. MISTRA Future Fashion- www.mistrafuturefashiofans.choiomn .com

3. Sustainable Clothing Action Plan: Clothing Knowledge Hub- www.wrap.org.uk/node/19930

4. Textiles Environment Design- www.tedresearch.net

5. Textile Futures Research Centre -www.tfrc.org.uk

6. Sandy Black | The Sustainable Fashion Handbook 2012

Tamsin Blanchard | Green is the New Black: How to Change The World with Style 2008

7. Michael Braungart and William McDonough | Cradle to Cradle: Remaking the Way We Make Things 2009

8. Sass Brown | ReFashioned: Cutting Edge clothing from Recycled Materials 2013

9. Elisabeth Cline | Overdressed: The Shockingly High Cost of Cheap Fashion 2012

10. Kate Fletcher and Lynda Grose | Fashion and Sustainability: Design for Change 2012

COURSE: THE YOGA PROFESSIONAL

COURSE CODE:GE1B-05

MODE: OFFLINE/ BLENDED

COURSE OBJECTIVE:

The course is designed to provide understanding about the textual and grammatical aspects of sanskrit language to enable the students to better imbibe the essence of the yogic concepts. The students will be able to interpret the new dimensions of yoga and education and be able to apply principles of yoga for personality development through objectivity.

Sl	Course Outcome	Mapped modules
1	Read and understand the colloquial words of Sanskrit.	M1, M2
2	Write in Sanskrit and have some idea about grammar.	M1, M2
3	Communicate and comprehend Sanskrit to the best of their ability.	M1, M2, M3
4	Understand the Interface between Culture & Psychology.	M4
5	Apply the principles of Culture & Basic Psychological Processes	M5
6	Assess the importance of Culture & Gender interrelation	M6

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Module Number	Content	Total Hours	%age of questions	Covered CO	Blooms Level	Remarks(If any)
Module 1	Introduction to reading, writing &speaking of Sanskrit language	10	15	1,2,3	2,3	
Module 2	Grammatical aspects of Sanskrit language	10	15	1,2,3	2,3	
Module 3	Transliteration according to authentic dictionary method	10	10	3	2,3	
Module 4	Interface between Culture & Psychology	10	10	4	2,3	
Module 5	Culture & Basic Psychological Processes	10	30	5	2,3,4,5	
Module 6	Culture & Gender	10	20	6	2,3,5	
		60	100			

Paper Code: GE**1B-0**5

THE YOGA PROFESSIONAL

Total Credit: 6

Detailed Syllabus:

MODULE 01 8L + 2T

Vowels and Consonants, pronunciation, articulation of each letter and the technical names of the letters according to their articulation, similar and dissimilar letters and how to write them.

Consonants combined with vowels, pronunciation and writing, special letters which do not follow the general method.

MODULE 02 8L + 2T

Conjunct letters, rules to combine consonants, special consonants, how Sanskrit articulation can be applied to languages like English, special attention to Anusvara, when it can be written in the form of a nasal, two consonant combinations and three consonant combinations, their writing practice, special conjunct letters and their writing.

MODULE 03 8L + 2T

Transliteration according to authentic dictionary method.

MODULE 04 8L + 2T

Interface between Culture & Psychology Methods of Understanding Culture, Scope of Cultural Psychology, Mechanisms of Cultural Transmission

MODULE 05 8L + 2T

Culture & Basic Psychological Processes Interrelation between Culture, Perception, Cognition Emotional expressions and Culture

MODULE 06 8L + 2T

Culture & Gender, Culture and Gender stereotype

REFERENCE BOOKS:

1. Dr. Sarasvati Mohan, Sanskrit Level-1 Sharadh Enterprises, Bangalore, 2007.
2. Dr. Sarasvati Mohan, DVD and CD.(Publication of Akshram and Hindu SevaPrathisthana)

SEMESTER-2

Paper: 2D ANIMATION (TRADITIONAL & DIGITAL ANIMATION)

Code: B3DAFM 201

Course Objective: The course is designed to learn animation fundamentals. It would explore various ways of creating characters and motion. Students will be able to develop an in- depth understanding of processes to help create better animation workflows using classical and digital representations. The students will use their creativity and technical skills to bring characters and stories to life as a 2D animator. Learn how to go from concept to finished animation, using industry-standard tools and the latest techniques from prominent animators in the business

Sl	Course Outcome	Mapped modules
1	Remembering	M1, M2
2	Understanding the course	M1, M2, M3, M4
3	Applying the general problem	M3, M4
4	Analyse the problems	M3, M4
5	Evaluate the problems after analysing	M3,M4
6	Create using the evaluation process	M3, M4

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)

M 1	History of Animation, Types of Animation, Animation Production Process	4	25		
M 2	Pre-Production Design	8	25		
M 3	Classical Animation	8	25		
M 4	Introduction to 2D Digital Animation	10	25		
		30	**100**		

Paper Code: B3DAFM- 201
2D Animation (Classical & Digital Animation)
Total Credit: 4
Total hours of lectures: 30 hours

Sl.	Topic/Module	Hour
1.	**Module 1- History of Animation, Types of Animation, Animation Production Process:** • History of animation a survey of the Heritage of Art & Architecture the methodology to analyze the language of the creative process and the principles of design, as well as techniques and materials. • Types of animation- Clay animation, Traditional animation, 3Danimation, Puppet/ toy animation, material animation. • To get rewarding careers in Entertainment Media, Feature Film, Television Episodes, Gaming, Web Animation, Ad agencies, E-Learning (Education) • Understanding of the pipeline of Pre- Production, production& post- production process	4
2.	**Module 2- Pre-Production Design:** • The production process of traditional 2D animation • Overview of equipment required to create 2D animation, traditional and digital. • Know the basics of story development, scriptwriting for animation • Basic and fundamental skills required to develop Character Design, Semi –Realistic Design, draw different styles of characters • Draw basic characters and character model sheets with expressions, key poses • Background Design- Environments • Storyboard Design – Creating Visual story using thumbnails • Overview of Shot breakdown, shot types, continuity, camera angles, camera movements,	8

	• Overview of Creating a storyboard • Introduction to Creating Animatic	
3.	**Module 3- Classical Animation:** • learn principles of animation • Instruction on drawing techniques for animation. • how to draw for animation using basic light box and image capture device/ software • Rolling Coin, Bouncing Ball • Pendulum, Hand-lift and Flag • Special effects in animation	8
4.	**Module 4- Introduction to 2D Digital Animation:** • Introduction to Adobe Animate • Basic understanding of the tools, Properties Inspector, Library and Timeline in Animate CC • Be able to effectively use and implement the various tools and make objects inside Animate itself • Complete grip on Motion Tween and Shape Tween animation concepts and use them in presentations and video animations	10

Suggested Software –

- Pencil 2D
- Adobe Animate
- Monkey Jam
- Flipbook
- Character Animate

Suggested Reading:

1. Animator's Survival Kit – Richard Williams
2. Cartoon Animation – Preston Blair
3. Illusion of Life- Disney Animation – Frank Thomas and Ollie Johnston
4. Timing for Animation – Harold Whitetaker, John Halas
5. Animation from Pencils to Pixels – Tony white

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Paper: 2D ANIMATION (TRADITIONAL & DIGITAL ANIMATION) Lab

Code: B3DAFM 291

Course Objective - The course is designed to learn animation fundamentals. It would explore various ways of creating characters and motion. Students will be able to develop an in- depth understanding of processes to help create better animation workflows using classical and digital representations. The students will use their creativity and technical skills to bring characters and stories to life as a 2D animator. Learn how to go from concept to finished animation, using industry-standard tools and the latest techniques from prominent animators in the business.

Course Outcome	Mapped modules
Remembering	M1, M2, M3, M4
Understanding the course	M1, M2, M3, M4
Applying the general problem	M1, M2
Analyse the problems	M4
Evaluate the problems after analysing	M3, M4
Create using the evaluation process	M3, M4

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
M 1	History of Animation, Types of Animation, Animation Production Process	5	25		
M 2	Pre-Production Design	15	25		
M 3	Classical Animation	23	25		
M 4	Introduction to 2D Digital Animation	17	25		
		60	**100**		

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Paper Code: B3DAFM- 291
2D Animation (Classical & Digital Animation) Lab
Total Credit: 2
Total hours of lectures: 40 hours

Sl.	Topic/Module	Hour
1.	**Module 1- History of Animation, Types of Animation, Animation Production Process:** • Making a thaumatrope. • Experimenting with flipbook • Discussion on careers in Entertainment Media, Feature Film, Television Episodes, Gaming, Web Animation, Ad agencies, E-Learning (Education) • Understanding of the pipeline of Pre- Production, production& post- production process with examples.	4
2.	**Module 2- Pre-Production Design:** • Ideation/ Concept and story development, • Scriptwriting of the story • Designing characters for the story • Draw basic characters and character model sheets with expressions, key poses • Background Design- Environments • Storyboard Design – Creating Visual story using thumbnails • Creating a storyboard • Creating Animatic	16
3.	**Module 3- Classical Animation:** • Rolling Coin, Bouncing Ball • Pendulum, Hand-lift and Flag • Special effects in animation	15
4.	**Module 4- Introduction to 2D Digital Animation:** • Drawing vector graphics inside Animate CC • Image Based and Vector Based rigging of characters • Using Motion Tween and Shape Tween animation concepts in presentations and video animations • Paint & Inking • Bouncing ball, Rolling coin	15

Equipments:
1. Light Box for 2D/Cartoon animation
2. Pen Table –Wacom

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Suggested Software –
Pencil 2D
Adobe Animate
Monkey Jam
Flipbook

Suggested Reading:

1. Animator's Survival Kit – Richard Williams
2. Cartoon Animation – Preston Blair
3. Illusion of Life- Disney Animation – Frank Thomas and Ollie Johnston
4. Timing for Animation – Harold Whitetaker, John Halas
5. Animation from Pencils to Pixels – Tony white

Paper: GRAPHIC DESIGN, AUDIO & VIDEO EDITING

Code: B3DAFM 202

Course Objective: The course is designed to provide an introduction to the fundamental aspects of graphic design using design methodologies to solve user-centric problems. Students will be able to develop an in-depth understanding of processes to help create better design workflows using graphical representations.

- Students will have improved their software knowledge.
- Students will develop Graphic designing skills.

Course Outcome	Mapped modules
Remembering	M1, M2, M3, M4
Understanding the course	M1, M2, M3, M4
Applying the general problem	M1, M2
Analyse the problems	M4
Evaluate the problems after analysing	M3, M4
Create using the evaluation process	M3, M4

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Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
M 1	Introduction to Graphic Design	4	10		
M 2	Designing (Photoshop, Illustrator, Indesign)	10	40		
M 3	Fundamentals of Motion Graphics	10	25		
M 4	Fundamentals of Audio & Video Editing	6	25		
		60	**100**		

Paper Code: B3DAFM- 202
Graphic Design, Audio & Video Editing
Total Credit: 4
Total hours of lectures: 30 hours

Sl.	Topic/Module	Hour
1.	**Module 1-Introduction to Graphic Design:** • A comprehensive introduction to the essentials and principles of Design. Articulating design, the brief, sources of inspiration, design as problem solving, creative thinking, wit and humor • Raster & Vector Graphics- RGB vs. CMYK • Color theory • Typography • Layers of meaning, development and experimentation, art direction, commissioning art, print, direct mail, information design, packaging, screen design, environmental design, self-promotion, portfolios, basic tools, specialist color, file formats, print finishing.	4
2.	**Module 2- Designing (Photoshop, Illustrator, and InDesign):** • Introduction to Photoshop, basics- workspace, finding and managing creative tools and content. Lines, shapes and objects. Working with layers, linking and embedding objects. Managing projects, color, fills and transparencies, filling objects. Special effects, templates and styles, pages and layout, bitmaps, printing, file formats, customizing and automating. • Introduction to Digital Painting. • Introduction to adobe illustrator, work area of illustrator, selecting and aligning, creating and editing shapes, transforming objects, drawing with pen and pencil tools, color and painting, working with type, working with layers, working with perspective drawing, blending colors and shapes, working with brushes, applying effects, applying appearance attributes and graphic styles, working with symbols, combining illustrator with other adobe applications. • Preparing graphics for web and print • Introduction to InDesign – Tools and techniques	10

	• Understanding Publication elements • Essentials in publication design • Study of various publication designs	
3.	**Module 3- Fundamentals of Motion Graphics:** • Instrumental Techniques used by professional motion graphic designers. • Introduction to After effects - About Composition, Solid layer, Shape layer, Text animation, Hud Effects, Info graphics Motion graphics • Create Motion Graphics to enhance your videos using a step by step, easy-to-use method. • How to Import and animate Illustrator Vector Graphics. • Master Visual Time Effects on Videos and Motion Graphics. • Practice compositing techniques to achieve stunning video effects. • Work in 3D space with Cameras, Lights and Shadows and practice your new skills with 3D Motion Graphics Projects. • Create advanced Type Animation in 2D & 3D – cool stuff only in After Effects.	10
4.	**Module 4- Fundamentals of Audio & Video Editing:** • Introduction to Adobe Premiere – tools and essentials • Edit an entire video from beginning to end, and make them more dynamic with cutaway footages and photos. • color correct the video and fix issues with white balance and exposure, add feeling with color grading, edit green screen footage and add backgrounds • Apply visual effects such as stabilizing shaky video, removing grain and making it more cinematic. • Reduce background noise, add music tracks, capture sound effects, use a variety of effects to enhance audio and add in/out fades. • Editing from the Bin- Cutting down Your Sequence - Navigating the Timeline- Thinking Nonlinearly - Trimming Fundamentals - Methods of Trimming - Types of Trim Importing and Exporting Motion Video, Types of Effects -Effect Design - Rendering – Key frames	6

Suggested Softwares:

- Adobe Photoshop
- Adobe Illustrator
- Adobe InDesign
- Adobe Premier
- Adobe After Effects
- Adobe Audition

Suggested Reading:

1. Adobe Photoshop CC Classroom - Andrew Faulkner
2. Adobe Illustrator CC Classroom - Andrew Faulkner

3. Adobe Premier CC Classroom - Andrew Faulkner
4. Create Motion Graphics with After Effects – Chris Meyer & Trish Meyer
5. Creative Workshop : 80 challenges to sharpen your Design Skills - David Sherwin
6. The Non-Designers Design Book - Robin Williams

Paper: GRAPHIC DESIGN, AUDIO & VIDEO EDITING Lab

Code: B3DAFM 292

Course Objective: The course is designed to provide an introduction to the fundamental aspects of graphic design using design methodologies to solve user-centric problems. Students will be able to develop an in-depth understanding of processes to help create better design workflows using graphical representations.

SL	Course Outcome	Mapped modules
1	Remembering	M1, M2, M3, M4
2	Understanding the course	M1, M2, M3, M4
3	Applying the general problem	M1, M2
4	Analyse the problems	M4
5	Evaluate the problems after analysing	M3, M4
6	Create using the evaluation process	M3, M4

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
M 1	Introduction to Graphic Design	5	40		
M 2	Designing (Photoshop, Illustrator, Indesign)	15			
M 3	Fundamentals of Motion Graphics	10	40		
M 4	Fundamentals of Audio & Video Editing	10			
		40	**80**		

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Paper Code: B3DAFM- 292
Graphic Design, Audio & Video Editing Lab
Total Credit: 2
Total hours of lectures: 40 hours

Sl.	Topic/Module	Hour
1.	**Module 1- Design** • Making layouts . manual logo designs • Creating Vector Illustrations	5
2.	**Module 2- Designing (Photoshop, Illustrator, and InDesign):** **DESIGN CONTENT-** Advertisement Design, Poster Design, Invitation design, Corporate Identity Logo, Designing Letterhead, Envelope, Business Card, Branding Designs, Product Packaging Design	15
3.	**Module 3- Fundamentals of Motion Graphics:** • Create Motion Graphics Using Illustrator Vector Graphics for animation • Master Visual Time Effects on Videos and Motion Graphics. • Practice compositing techniques to achieve stunning video effects. • Work in 3D space with Cameras, Lights and Shadows and practice your new skills with 3D Motion Graphics Projects. • Create advanced Type Animation in 2D & 3D	10
4.	**Module 4- Fundamentals of Audio & Video Editing:** • Edit an entire video from beginning to end, and make them more dynamic with cutaway footages and photos. • color correct the video and fix issues with white balance and exposure, add feeling with color grading, edit green screen footage and add backgrounds • Apply visual effects such as stabilizing shaky video, removing grain and making it more cinematic. • Reduce background noise, add music tracks, capture sound effects, use a variety of effects to enhance audio and add in/out fades. • Editing from the Bin- Cutting down Your Sequence - Navigating the Timeline- Thinking Nonlinearly - Trimming Fundamentals - Methods of Trimming - Types of Trim Importing and Exporting Motion Video, Types of Effects -Effect Design - Rendering – Key frames	10

Suggested Softwares:

- Adobe Photoshop
- Adobe Illustrator
- Adobe InDesign
- Adobe Premier
- Adobe After Effects
- Adobe Audition

Suggested Reading:

1. Adobe Photoshop CC Classroom - Andrew Faulkner
2. Adobe Illustrator CC Classroom - Andrew Faulkner
3. Adobe Premier CC Classroom - Andrew Faulkner
4. Create Motion Graphics with After Effects – Chris Meyer & Trish Meyer
5. Creative Workshop : 80 challenges to sharpen your Design Skills - David Sherwin
6. The Non-Designers Design Book - Robin Williams

Paper: ENGLISH COMMUNICATION

Code: B3DAFM203

Course Objective: The course is designed to develop the student's communicative competence in English by giving adequate exposure in the four communication skills - LSRW - listening, speaking, reading and writing and the related sub-skills, thereby, enabling the student to apply the acquired communicative proficiency in social and professional contexts.

SL	Course Outcome	Mapped modules
1	Remembering	M1, M2, M3, M4
2	Understanding the course	M1, M2, M3, M4
3	Applying the general problem	M1, M2
4	Analyse the problems	M4
5	Evaluate the problems after analysing	M3, M4
6	Create using the evaluation process	M3, M4

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Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
M 1	Functional grammar & Vocabulary	2	10	1,2	
M 2	Reading Skills	2	20	1,2	
M 3	Writing Skills	8	40	2,3,4,	
M 4	Listening & Speaking Skills	8	30	2,3,4	
		20	**100**		

Paper Code: B3DAFM- 203
English Communication
Total Credit: 2
Total hours of lectures: 20 hours

Sl.	Topic/Module	Hour
1.	**Module 1- Functional Grammar & Vocabulary:** Tense: Formation and application; Affirmative / Negative / Interrogative formation; Modals and their usage; Conditional sentences; Direct and indirect speech; Active and passive voice; usage of common phrasal verbs, synonyms & antonyms.	2
2.	**Module 2- Reading Skills:** Comprehension passages; reading and understanding articles from technical writing. Interpreting texts: analytic texts, descriptive texts, discursive texts; SQ3R reading strategy.	2
3.	**Module 3- Writing Skills:** Writing business letters - enquiries, complaints, sales, adjustment, collection letters, replies to complaint & enquiry letters; Job applications, Résumé, Memo, Notice, Agenda, Reports – types & format, E-mail etiquette, advertisements.	8
4.	**Module 4- Listening & Speaking :** Listening: Listening process, Types of listening; Barriers in effective listening, strategies of effective listening Speaking: Presentations, Extempore, Role-plays, GD, Interview	8

Suggested Reading:

1. Bhatnagar, M & Bhatnagar, N (2010) Communicative English for Engineers and Professionals. New Delhi: Pearson Education.
2. Raman, M & Sharma, S (2017) Technical Communication. New Delhi: OUP.
3. Kaul, Asha (2005) The Effective Presentation: Talk your way to success. New Delhi: SAGE Publication.

4. Sethi, J & Dhamija, P.V. (2001), A Course in Phonetics and Spoken English. New Delhi: PHI.
5. Murphy, Raymond (2015), English Grammar in Use. Cambridge: Cambridge University Press.
6. R.C. Sharma and K.Mohan Business Correspondence and Report Writing Tata McGraw Hill , New Delhi , 1994

GENERAL ELECTIVE (Any 1 from the Basket)

Course Name: Cinema and Other Arts

Course Code: GE2B-01

Mode: Offline/ Blended

Course Objective: The course is designed to provide a general understanding and appreciation of the history of world cinema, acclaimed international films, artists, and movements. The students will be able to gain a multiple cultural perspective based on the underlying theories and principles of cinema and media.

Sl	Course Outcome	Mapped modules
1	Understand the fundamental components of a Cinema and other arts	M1, M2, M3, M4, M5, M6
2	Remember the readings and understand the perspective	M1, M2
3	Understand the nuances of modern painting	M2, M3
4	Understand the nuances of Indian painting	M2, M3, M4
5	Understand and examine the Indian and Western music	M1, M2, M5
6	Analyze the music of parallel and commercial Indian cinema	M1, M2, M5, M6

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
Module 1	Pre-Renaissance	10	15	L1, L2	
Module 2	Renaissance and Perspective	10	15	LI, L2	
Module 3	Modern Painting	08	15	L1, L2	Workshop
Module 4	Indian Painting	08	15	L1, L2	Workshop

Module 5	Fundamentals of music	12	15	L2, L3	Workshop
Module 6	Music and cinema	12	25	L2, L3	Workshop
		60	100		

Paper Code: **GE2B-01**
Cinema and Other Arts.
Total Credit: 6
Total hours of lectures: 60 hours

Detailed Syllabus:

M1	**Pre-Renaissance**: Visual representations in cave paintings, in folk cultures and early civilizations like Egypt Visual representations in Greece: A breakaway from earlier practices Visual representations in ancient and medieval India: Ajanta cave paintings,Mughal miniature, Kangra, Ragmalaetc
M2	**Renaissance and Perspective** The Renaissance at a Glancefrom The Enquiring Eye – European Renaissance Art, Development of the idea of perspective; Use of camera obscura and camera lucida Selected Readings from John Berger's Ways of Seeing, Dutch painting; Baroque, Rococo and Mannerism.
M3	**Modern Painting:**Impressionism, Expressionism, Surrealism, Cubism
M4	Indian Painting Raja Ravi Verma, Bengal School Contemporary Masters
M5	Fundamentals of music: Tone, note, key, octave, musical scales – diatonic and tempered scales, chords, melody, harmony, swar and shruti Folk music, forms and structures of Indian classical music, forms and structures of western classical music; Evolution of musical forms; Music industry and popular music; Urban folk music, Blues, Jazz, Rock
M6	Music and cinema; Music for Cinema Comparison of the two art forms – music and cinema; Ray and Ghatak's ideas on structural similarities of music and cinema Analysis of structures of films to compare with musical forms Musical accompaniment of films – from live musical accompaniment of silent era to present day. Diagetic and extra-diagetic music Analysis of music tracks of selected films Electronic Vs acoustic musical accompaniment (Has to be done as a workshop by a music composer) Item numbers of Bollywood films

Suggested Readings:

1. Andrei Tarkovsky, Sculpting in Time
2. Satyajit Ray, Our Films Their Films
3. RitwikGhatak, Rows and Rows of Fences
4. Penguin Dictionary of Music

5. S.C Deva, Music of India
6. E.H Gombirch, The Story of Art, Phaidon Publications
7. Hendrik Willen Van Loon, The Arts of Mankind
8. Hugh Honour and John F. Fleming, The Visual Arts: A History. Prentice Hall, 2005. Sylvan Barnet,A Short Guide to Writing About Art. Prentice Hall, 2007.
9. The Enquiring Eye – European Renaissance Art (National Gallery of Art, Washington)
10. Herbert Read The Meaning of Art 11. Walter Pater The Renaissance
12. John Berger, Ways of Seeing
13. Art Through the Ages by Helen Gardner
14. Nothing If Not Critical: Selected Essays on Art and Artists
15. The Story of Painting by Wendy Beckett
16. Minor: Art Historys History _p2 by Vernon Hyde Minor
17. Isms: Understanding Art by Stephen Little
18. The Visual Arts: A History by Hugh Honour
19. What Are You Looking At: 150 Years of Modern Art in a Nutshell by Will Gompertz
20. Art and Illusion: A Study in the Psychology of Pictorial Representation by E.H. Gombrich

Course Name: Surface & Soft Furnishings Design Development Techniques

Course Code- GE2B-02

Mode-Offline/ Blended

Course Objective: The course is designed to provide a conceptual understanding of interior design of spaces with surface and soft furnishings. The students will be able to visually express with colour, texture, pattern and material effects for surface design appropriate to project specifications.

Sl	Course Outcome	Mapped modules
1	Understand the fundamental interior design aspects of surface and soft furnishings	M1, M2, M6
2	Understand the fundamentals of textiles and types	M1, M2
3	Understand and demonstrate printing techniques	M2, M3
4	Understand the apply embroideries	M2, M3, M4
5	Understand and examine materials, techniques, and technology	M1, M2, M5
6	Apply the surface designs	M5, M6

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Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
Module 1	Textiles and Its Types	08	15	L1, L2	
Module2	Research soft furnishings and textiles/fabrics used in the design	08	15	L1, L2	
Module 3	Printing and its techniques	10	15	L1, L2	
Module 4	Embroideries and its types	10	15	L1, L2	
Module5	Exploration of materials, techniques and technologies for the development of surface design	12	15	L2, L3	
Module6	Final surface designs and presentation	12	25	L3	
		60	100		

Paper Code: **GE2B-01**
Surface & Soft Furnishings Design Development Techniques
Total Credit: 6
Total hours of lectures: 60 hours

Detailed Syllabus:

Module -1: Textiles and Its Types

Introduction to textiles – Indian (kalamkari, matanipachedi, ikkat) and international textiles.

Special embellishment techniques: Batik, Tie and dye - lehariya, bandhini ,shibori, sunray and marbling.

Module – 2: Research soft furnishings and textiles/fabrics used in the design

Table Linens

Rugs & Carpets

Window dressings (Curtains & Blinds)

Towels

Bedding & Bedspreads

Cushions & Throw

Lampshades

Wallpaper

Tiles

Flooring

Module -3: Printing and its techniques

Print application through block printing, Lino printing, Wood cut printing, Lithograph printing

Print application through screen & block printing (vegetable block and wooden blocks, Appliqué, quilting, Smocking, honey comb, Fabric painting, Stencil- dabbing and spraying).

Natural dyeing techniques and explorations

Module -4: Embroideries and its types

Basic Hand Embroidery, their technique, variations and applications. Basic running stitch, backstitch, stem stitch, chain stitch, lazy daisy stitch, buttonhole stitch, featherstitch, herringbone stitch, knot stitch, satin stitch and cross-stitch.

Traditional Embroidery- Origin, application &colours. Kantha, Chikan, Kasuti, Zardosi, Kutch and Mirror work.

Module -5: Exploration of materials, techniques and technologies for the development of surface design

Print – Screen, Block, Mono etc.

Stenciling

Fabric Dye (Natural and Azo free)

Fabric paints

Fabric and textiles Embellishment

Module -6: Final surface designs and presentation

Develop surface designs for a range of applications.

Reference / Books:

1. The Complete Technology Book on Dyes & Dye Intermediates Paperback – 1 Jan 2003 by NIIR Board of Consultants & Engineers (Author)
2. Biodegradation of Azo Dyes by HaticeAtacagErkurt (Editor) – Publisher: Springer (9 August 2010), ISBN-10: 3642118917
3. Second Skin: Choosing and Caring for Textiles and Clothing by India Flint Murdoch Books, 2011 ISBN 978-1-74196-720
4. Indigo:The Color that Changed the World by Catherine Legrand Thames & Hudson, 2013 ISBN 978- 0500516607

5. Warp and Weft:
6. Woven Textiles in Fashion, Art and Interiors by Jessica HemmingsBloomsbury, 2012 – ISBN 978-1- 4081-3444-3
7. Quilt National 2013:The Best of Contemporary Quilts by The Dairy Barn Cultural Arts Center
8. DragonThreads Extraordinary Textile Arts Books, 2013 - ISBN 978-0-9818860-4-6
9. Surface Design for Fabric: Studio Access Card Printed Access Code – February 15, 2015 by Kimberly Irwin Publisher: Fairchild Books (February 15, 2015) ISBN-10: 1501395033

Websites

1. https://www.houseology.com/masterclass/design-school/chapter-eight-soft-furnishings
2. https://www.twosistersecotextiles.com/pages/azo-dyes

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Paper: ADVERTISING

Code: GEB203

Course Objective: The course is designed to provide an introduction to the fundamental aspects of graphic design using design methodologies to solve user-centric problems. Students will be able to develop an in-depth understanding of processes to help create better design workflows using graphical representations.

SL	Course Outcome	Mapped modules
1	Remembering	M1, M2, M3, M4
2	Understanding the course	M1, M2, M3, M4
3	Applying the general problem	M1, M2
4	Analyse the problems	M4
5	Evaluate the problems after analysing	M3, M4
6	Create using the evaluation process	M3, M4

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
M 1	Advertising	6	25		
M 2	Marketing Communication Models	8	25		
M 3	Creative planning	8	25		
M 4	Advertising Agency	8	25		
		30	**100**		

Paper Code: GEB203
ADVERTISING
Total Credit: 4
Total hours of lectures: 30 hours

Sl.	Topic/Module	Hour
1.	**Module 1- Advertising** • Definition • History • Function • Classification • Objective • Market Segmentation: Behaviouristic, Geographic, Demographic and	6

	Psychographic.	
2.	**Module 2- v Marketing Communication Models** • AIDA, AIDAS, IEEO, DAGMAR, PLC and its relation with advertising, • Advertising Medias • Media Planning and Scheduling • Advertising Campaign	8
3.	**Module 3- Creative Planning** • Idea and Concept • Writing advertising copy • Advertising style and strategy • Colour Scheme • Typography.	8
4.	**Module 4- Advertising Agency** • Role of Advertising Agency • Ethics in Advertising • Role of ASCI.	8

References/Suggested Readings:

1. Frank Jefkins, Advertising Made Simple, Rupa& Co.
2. David Ogilvy. Confessions of an Advertising Man. Southbank Publishing, 2011.
3. David Ogilvy. Ogilvy on Advertising. Prion Publishing Group. 2011
4. Jaishri N Jethwaney . Advertising. Phoenix publishing House Pvt. ltd. 1999
5. Chunawalla , Advertising Theory And Practice, Himalaya Publishing House.

Paper: ADVERTISING Lab

Code: GEB293

Course Objective: To develop skills to create effective Advertising for various Media. To become an advertising professional.

SL	Course Outcome	Mapped modules
1	Remembering	M1, M2, M3, M4
2	Understanding the course	M1, M2, M3, M4
3	Applying the general problem	M1, M2
4	Analyse the problems	M4

5	Evaluate the problems after analysing	M3, M4
6	Create using the evaluation process	M3, M4

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
M 1	Introduction to visual Thinking	6	50		
M 2	Hard Sell & Soft Sell Advertisement	10			
M 3	Social Advertisement	10	50		
M 4	Shooting for making commercial goods advertisement	14			
		40	**100**		

Paper Code: GEB293
ADVERTISING Lab
Total Credit: 2
Total hours of lectures: 40 hours

Sl.	Topic/Module	Hour
1.	**Module 1- Introduction to visual thinking** • Visualizing an Advertisement - Case Study 1. • Visualization approach: Direct or Indirect approach, Colour Scheme, Visualization styles unusual illustration, before and after strategy. Use of Testimonials, Special layout style	6
2.	**Module 2- Hard Sell & Soft Sell Advertisement** • Hard sell Advertisement: Visualizing, creating copy and visuals for Hard sell advertising • Soft sell Advertisement: Visualizing, creating copy and visuals for Soft sell advertising.	10
3.	**Module 3- Social Advertisement** • Visualizing, creating copy and visuals for Social advertising. • Humorous Advertisement: Visualizing, creating copy and visuals for Humour based advertising in Print media.	10
4.	**Module 4- Shooting for making a Commercial goods Advertisement**	14

	• Visualizing and shooting the visuals for Commercial goods advertisement. Commercial goods Advertisement • Creating copy and visuals for a Commercial goods Advertisement.	

References/Suggested Readings:

1. James Webb Young—― A Technique for Producing Ideas‖, Stellar Editions.

2. Robert W. Bly—―The Copywriter's Handbook: A Step-By-Step Guide To Writing Copy That Sells, Holt Coursebacks.

3. Victor O. Schwab—―How to Write a Good Advertisement‖, Golden Springs Publishing.

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SEMESTER-3

Paper: CLAY MODELLING & CG MODELLING

Code: B3DAFM 301

Course Objective: Here the students would learn the techniques and tools that can help you approach modelling nearly any shape with confidence. They would learn basics such as selecting and manipulating objects, organizing scenes, and customizing the interface. Next, review polygonal modelling, creating and refining meshes, sculpting, and NURBS modelling. It starts with an overview of modeling basics, before moving on to creating some specific models of a chair, a side table, and several other small room objects like walls, floors, books, bookshelves, and picture frames. Finally, he puts the whole room together by cleaning up all the files, importing the individual files into a single file, and adding the final camera shot, creating a toon character etc.

SL	Course Outcome	Mapped modules
1	Remembering	M1, M2, M3, M4
2	Understanding the course	M1, M2, M3, M4
3	Applying the general problem	M1, M2
4	Analyse the problems	M4
5	Evaluate the problems after analysing	M3, M4
6	Create using the evaluation process	M3, M4

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
M 1	Clay Modeling & Introduction about the 3D software	6	25		
M 2	Polygonal Modelling	7	25		
M 3	NURBS Modelling	7	25		
M 4	Sub Division Modelling	10	25		
		30	**100**		

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Paper Code: B3DAFM- 301

CLAY MODELLING & CG MODELLING

Total Credit: 4

Total hours of lectures: 30 hours

Sl.	Topic/Module	Hour
1.	**Module 1- Clay Modeling & Introduction about the 3D Enviornment** • Focuses on modelling characters with different types of clay. Clay models are used to improve visualization while modelling 3D digital characters. Use overlaying modelling to feel and understand the anatomy, proportions and depth of the model. • Maya Introduction and Interface – Difference between World, Local and Object Co-ordinate system • Knowing about file importing, exporting and execution and applying references to the files. • Creating a project file in Maya	6
2.	**Module 2- Polygonal Modelling** • Concepts, Advantages and Disadvantages of Poly modelling, • Creating polygon primitive objects • Polygon components and menu • Booleans, Combining and separating polygons • Building and Editing Poly models • Splitting and sub-dividing polygons • Extruding polygons, Merging vertices, Bevel • Sculpt Polygon • Maya Node System and Linking, Grouping.(Parenting and unparenting)	7
3.	**Module 3- NURBS & Sub Division Modelling** • Concepts, ,Advantages and Disadvantages of Poly modelling • Creating NURBS primitive objects, Creating NURBS curves • NURBS components, Editing NURBS surfaces • Lofting and extruding curves to create surfaces, attaching and detaching surfaces • Revolving, attaching and detaching curves, • Socking • Stitching surfaces • Converting polygon to Sub-D, Sub-D commands	7
4.	**Module 4- Modelling Clean up** • Concepts • Topology • Hierarchy • Mirror,attach	10

	• Clean up of model files • Finalizing model	

Suggested Software – Autodesk Maya

Suggested Reading:

1. Autodesk Maya 2018 by Ticked Sham
2. Mastering Autodesk Maya 2017 by Eric Keller.
3. Introducing Maya 2017 by Dariush Derakhshani.
4. Maya 8 Character Modeling by Gary Oliverio, Jones and Bartlett Publishers, 2006
5. Advanced Maya: Character Modeling by Kenny Cooper and Jim Lammers, Trinity Animation, Inc.2003
6. Jason Patnode, Character Modeling with Maya and ZBrush: Professional polygonal modeling techniques, Focal Press; Pap/Dvdr edition, 2008

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Paper: CLAY MODELLING & CG MODELLING Lab

Code: B3DAFM 391

Course Objective:

- To gain good knowledge to create 3d character modeling.
- To apply experimental production techniques to animation and game creation

Course Outcome	Mapped modules
Remembering	M1, M2, M3, M4
Understanding the course	M1, M2, M3, M4
Applying the general problem	M1, M2
Analyse the problems	M4
Evaluate the problems after analysing	M3, M4
Create using the evaluation process	M3, M4

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
M 1	**Clay Modeling & Introduction about the 3D software**	6	40		
M 2	**Polygonal Modelling**	12			
M 3	**NURBS Modelling**	12	40		
M 4	**Sub Division Modelling**	10			
		40	**100**		

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Paper Code: B3DAFM- 391

CLAY MODELLING & CG MODELLING Lab

Total Credit: 2

Total hours of lectures: 40 hours

Sl.	Topic/Module	Hour
1.	**Module 1- Clay Modelling** • Hands on sessions modelling objects with clay • Creating small models from polymer clay, • Learning the art of sculpting • Showing video tutorial about Maya introduction and interface.	6
2.	**Module 2- Polygon modeling** • Making an exterior - landscape, garden, cityscapes, monuments, bridges, fences, • Modelling interiors (different kinds and styles of rooms)	12
3.	**Module 3- Nurbs modeling** • Creating bathroom/living room/ kitchen with props – as table , vase etc. • Creating an oil can using sub-D	12
4.	**Module 4- Toon character** • Modelling a toon character/human/4 legged	10

Suggested Software – Autodesk Maya

Suggested Reading:

1. Autodesk Maya 2018 by Ticked Sham
2. Mastering Autodesk Maya 2017 by Eric Keller.
3. Introducing Maya 2017 by Dariush Derakhshani.
4. Maya 8 Character Modeling by Gary Oliverio, Jones and Bartlett Publishers, 2006
5. Advanced Maya: Character Modeling by Kenny Cooper and Jim Lammers, Trinity Animation, Inc.2003
6. Jason Patnode, Character Modeling with Maya and ZBrush: Professional polygonal modelling techniques, Focal Press; Pap/Dvdr edition, 2008

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Paper: TEXTURING

Code: B3DAFM 302

Course Objective: This course will focus on learning the UV Basics, tiling textures, Scaling Texture, creating bump, specular, and normal maps. The learning will also be based on image manipulation features in Photoshop to build 3D textures and then moving to Substance Painter, which is widely used in studios. The course would emphasise on creating procedural textures that are applied back in Maya. The course provides hands-on practice and a solid workflow that will help you texture almost any object you encounter in the future.

Course Outcome	Mapped modules
Remembering	M1, M2, M3, M4
Understanding the course	M1, M2, M3, M4
Applying the general problem	M1, M2
Analyse the problems	M4
Evaluate the problems after analysing	M3, M4
Create using the evaluation process	M3, M4

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
M 1	**Material and Shaders**	8	25		
M 2	**UV s**	4	25		
M 3	**Texturing using Photoshop**	6	25		
M 4	**Texturing using Substance Painter**	12	25		
		30	**100**		

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Paper Code: B3DAFM- 302
TEXTURING
Total Credit: 4
Total hours of lectures: 30 hours

Sl.	Topic/Module	Hour
1.	**Module 1- Material and Shaders** • Overview of Maya Rendering • Introduction to hypershade • Understanding the basic shader types • Work with Arnold materials • Opacity and Refraction in Arnold • Create and apply maps • Using bitmaps as textures • Working with hypershade window • Create materials in hypershade	8
2.	**Module 2- UV s** • UV Mapping Techniques- Understanding UV's, editing UV's and using mapping projections on polygon surfaces, planer mapping, cylindrical mapping, spherical mapping, automatic mapping, working with UV texture editor window • UNWRAPPING UV'S- Understanding unwrapping, unwrapping props and characters to facilitate texture painting, relaxing and unfolding UV's, split UV's, creating UV sets	4
3.	**Module 3- Texturing using Photoshop** • Creating Textures in photoshop • Review Reference Materials • Tile Textures • Creating maps – Bump, Diffuse, Specular, Normal.	6
4.	**Module 4- Texturing using Substance Painter** • Interface & Creating a project • Baking Maps/Textures • Creating & Applying Material • Modifying Channels • Using the Transform tools,Projection modes and Anchors • Using the painting tools • Working with layer effects • Rendering and Exporting Textures • Applying textures from Substance to Maya	12

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Suggested Software – Autodesk Maya
Adobe Photoshop
Substance Painter

Suggested Reading:

1. Autodesk Maya 2018 by Ticked Sham
2. Mastering Autodesk Maya 2017 by Eric Keller.
3. Introducing Maya 2017 by Dariush Derakhshani.
4. Beginning PBR Texturing: Learn Physically Based Rendering with Allegorithmic's Substance Painter – Abhishek Kumar
5. Advanced Maya Texturing and Lighting – Lee Lanier

Paper: TEXTURING Lab

Code: B3DAFM 392

Course Objective: This course will focus on learning the UV Basics, tiling textures, Scaling Texture, creating bump, specular, and normal maps. The learning will also be based on image manipulation features in Photoshop to build 3D textures and then moving to Substance Painter, which is widely used in studios. The course would emphasise on creating procedural textures that are applied back in Maya. The course provides hands-on practice and a solid workflow that will help you texture almost any object you encounter in the future.

Course Outcome	Mapped modules
Remembering	M1, M2, M3, M4
Understanding the course	M1, M2, M3, M4
Applying the general problem	M1, M2
Analyse the problems	M4
Evaluate the problems after analysing	M3, M4
Create using the evaluation process	M3, M4

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
M 1	**Material and Shaders**	10	40		

M 2	**UV s**	8			
M 3	**Texturing using Photoshop**	8	40		
M 4	**Texturing using Substance Painter**	14			
		40	**80**		

Paper Code: B3DAFM- 392
TEXTURING Lab
Total Credit: 4
Total hours of lectures: 40 hours

Sl.	Topic/Module	Hour
1.	**Module 1- Material and Shaders** • Overview of Maya Rendering • Understanding the basic shader types • Work with Arnold materials • Opacity and Refraction in Arnold • Create and apply maps • Using bitmaps as textures • Working with hypershade window • Create materials in hypershade	10
2.	**Module 2- UV s** • unwrapping props and characters to facilitate texture painting, relaxing and unfolding UV's, split UV's, creating UV sets • Applying texture maps to the polygon surfaces by unwrap tool with basic uv tools and to assign 2d and 3d projections.	8
3.	**Module 3- Texturing using Photoshop** • Textures 2d and 3d projections and utilities • Creating Brick textures • Wood textures • Texturing a prop • Creating Maps	8
4.	**Module 4- Texturing using Substance Painter** • Texturing an oil can /weapon/prop in substance Painter • Texturing a Lamp Shade/Light bulb • skin texture/ plastic/ wood/leather	14

Suggested Software – Autodesk Maya

Adobe Photoshop
Substance Painter

Suggested Reading:

1. Autodesk Maya 2018 by Ticked Sham
2. Mastering Autodesk Maya 2017 by Eric Keller.
3. Introducing Maya 2017 by Dariush Derakhshani.
4. Beginning PBR Texturing: Learn Physically Based Rendering with Allegorithmic's Substance Painter – Abhishek Kumar
5. Advanced Maya Texturing and Lighting – Lee Lanier

Paper: LIGHTING & COMPOSITING (INTRO TO NUKE)

Code: B3DAFM 303

Course Objective: This paper will focus on understanding the different kinds of lights and light set-up in a Maya Scene. This course is an introduction where you should be able to perform basic 2D and 3D visual effects compositing with Nuke. In this section, you can learn about Nuke channels, node trees, and keyframe animation and get an overview of the compositing workflow. You will also get introduced to 2D compositing: image transformations, color correction, rotoscoping, keying, timing adjustments, and tracking. Similarly, you can expand your skills into 3D: working with lights and cameras, transforming and deforming 3D geometry, applying materials and textures, and rendering.

To posses virtual lighting technologies and the tools necessary to create photorealistic imagery.

Course Outcome	Mapped modules
Remembering	M1, M2, M3, M4
Understanding the course	M1, M2, M3, M4
Applying the general problem	M1, M2
Analyse the problems	M4
Evaluate the problems after analysing	M3, M4

Create using the evaluation process	M3, M4

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
M 1	**Introduction to Lighting & Maya Lighting**	8	25		
M 2	**Arnold Lighting**	8	25		
M 3	**Introduction to Nuke & 2D Compositing**	8	25		
M 4	**3D Compositing**	8	25		
		32	**100**		

LIGHTING & COMPOSITING (INTRO TO NUKE)

Total Credit: 4

Total hours of lectures: 32 hours

Sl.	Topic/Module	Hour
1.	**Module 1- Introduction to Lighting & Maya Lighting** • Introduction to CG Lighting • Working with Maya Lights 1-Point, Direct, Spot,Ambient, Area and Volume, • Three Point Lighting and Exterior Lighting, Cast shadows, decay rate, Previewing lighting and shadows • Creating depth map Shadow, creating ray traced shadows, • Concept of lighting system and shadows, Creating area light shadows, setting area light visibility	8
2.	**Module 2- Arnold Lighting** • Introducing Arnold and its rendering concepts • Basic Maya Lights for Arnold • Using Arnold lights • Add depth of field in Arnold • Create motion blur in Arnold • Volumetric Lighting in Arnold • Exterior & Interior Lighitng in Arnold • Maya Rendering in Arnold • Enviornmental Lighting	8

	• Creating Basic Lighting Passes	
3.	**Module 3- Introduction to Nuke & 2D Compositing** • Tour of the interface • TheTimeline • Project Settings • Build Node trees • Working with properties panels • Adjust node parameters • Keyframe Animation • TheDope Sheet • The curve Editor • Introduction to the channels, 2D Viewer Wipe controls • Transfer Images, Corner Pinning, Reformat images, Color Correcting • Rotoscoping • Mask Operations • Compositing multipass CGI • Chromakey basics • Tracking Basics	8
4.	**Module 4- 3D Compositing** • Overview of 3D Compositing • 3D Viewer • Built in geometric Perspectives • Lights • Cameras • Transform Geometry • ThePhong Shader & Material Properties • Camera Projection • Deform Geometry	8

Suggested Software – Autodesk Maya
Foundry Nuke

Suggested Reading:

1. Autodesk Maya 2018 by Ticked Sham
2. Mastering Autodesk Maya 2017 by Eric Keller.
3. Advanced Maya Texturing and Lighting – Lee Lanier
4. Introducing Maya 2017 by Dariush Derakhshani.

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Paper: LIGHTING & COMPOSITING (INTRO TO NUKE) Lab

Code: B3DAFM 393

Course Objective: This paper will focus on understanding the different kinds of lights and light set-up in a Maya Scene. This course is an introduction where you should be able to perform basic 2D and 3D visual effects compositing with Nuke. In this section, you can learn about Nuke channels, node trees, and keyframe animation and get an overview of the compositing workflow. You will also get introduced to 2D compositing: image transformations, color correction, rotoscoping, keying, timing adjustments, and tracking. Similarly, you can expand your skills into 3D: working with lights and cameras, transforming and deforming 3D geometry, applying materials and textures, and rendering.

Course Outcome	Mapped modules
Remembering	M1, M2, M3, M4
Understanding the course	M1, M2, M3, M4
Applying the general problem	M1, M2
Analyse the problems	M4
Evaluate the problems after analysing	M3, M4
Create using the evaluation process	M3, M4

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
M 1	**Maya Lighting**	10	40		
M 2	**Arnold Lighting**	10			
M 3	**Introduction to Nuke & 2D Compositing**	10	40		
M 4	**3D Compositing**	10			
		30	**80**		

LIGHTING & COMPOSITING (INTRO TO NUKE) Lab

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Total Credit: 2
Total hours of lectures: 30 hours

Sl.	Topic/Module	Hour
1.	**Module 1- Maya Lighting** • Set light for Day, Night and Morning • Create FOG nodes in your scene. • Render a frame and video of indoor and outdoor scenes. • Direct Illumination-Creating and Illuminating a Stage Show,	10
2.	**Module 2- Arnold Lighting** • Arnold viewport rendering, Render a frame and video of indoor and outdoor scenes. • Render a photorealistic output of an interior scene. • Render a natural scene show different time by varying lighting. • Advance lighting using arnold render.	10
3.	**Module 3- Introduction to Nuke** & 2D Compositing (After Effects) • Loading images • Using Generators • Frame range & Timing • The write & read node • Merging nodes and compositing • Assignments will be done on following above points • Render a 2D composite scene	10
4.	**Module 4- Compositing & Introduction of Nuke** • Integrating a CGI (Computer Generated Image) render into a real scene • Learn how to make a 3D Scene • Render layers (AOVs) inside of Nuke, and how to break them apart • Create dynamic lens flares based off of source imagery • Studying shadow & light, and how to match the real world • Matching color tones, darks, highlights of an image • Using utility passes to do spot corrections (Position Pass) • Learn the variety of uses for Z-Depth passes • Use ID passes to correct different geometries • Learn how to match camera attribute (Defocus, Grain, Bokeh, Lens Distortion) • Create realistic post-production camera imperfections and artifacts • Compositing elements / FX into a shot • How to quality control (QC) your final shot • How to use the normals AOV to fine tune CG. • Assignments will be done on following above points induvial on different live footages and render images	10

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Suggested Software – Autodesk Maya
Nuke

Adobe After Effects

Suggested Reading:

1. Autodesk Maya 2018 by Ticked Sham
2. Mastering Autodesk Maya 2017 by Eric Keller.
3. Introducing Maya 2017 by Dariush Derakhshani.
4. Advanced Maya Texturing and Lighting – Lee Lanier

GENERAL ELECTIVE (Any 1 from the Basket)

Course Name- Study of Textiles
Course Code- GE3B-01

Mode-Offline/ Blended

Course Objectives: The course is designed to provide working knowledge of textile, the best utilization of available fabric resources, the awareness of its property, suitability for a particular use. The students will be able to understand and apply the acquired knowledge in their designs., and enhance aesthetic and functional value of textile material for fashion industry.

Course Outcomes (CO):

Sl	Course Outcome	Mapped modules
1	Remember & Understand different types of Textile materials available in the market and their uses.	M1, M2
2	Understand various kinds of fabrics, their structure, properties and the utility.	M2,
3	Understand Textile dyeing, printing and finishing techniques and	M3, M4.
4	Apply dyeing & Printing techniques on fabric samples to add aesthetic value to it	M4, M6
5	Remember & Understand various traditional hand embroidery techniques of India, and Apply this techniques for surface ornamentation of fabric samples	M5
6	Apply different embellishment techniques on different samples for value addition to it	M6

Module	Content	Total	%age of	Covered	Blooms	Remarks

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		Hours	questions	CO	Level	(If any)
Module 1	Fiber Classification	4	12	1	1,2	
Module 2	Yarn & Fabric Formation	10	20	1	1,2	
Module 3	Fabric Finishing	6	20	2,3	1,2	
Module 4	Dyeing & Printing	8	20	3,4	2,3	
Module 5	Embroidery (Practical)	16	16	5	2,3	
Module 6	Surface Embellishment (Practical)	16	12	4, 6	2,3	
		60	100			

Detailed Syllabus:

Module I (4 Hours)

Introduction to Textiles and classification of fibres
According to source– Natural and Manmade.
Identification and properties of Textile fibres- Cotton, Silk, Wool, Linen, Rayon(regenerated),Acetate ,Polyester, Nylonand Acrylic.

ModuleII (10 Hours)

Process of yarn for mation– handspinning, mechanical–ring spinning and modern-open end spinning. Yarn classification–simple and novel tyyarns, characteristics, properties and uses of different yarn.

Method of fabric construction: Weaving-. Basic weaves-plain, satin, twill and their variations. Fancy weaves-pile, dobby, jacquard, extrawarp and weftfigure, leno, crepe and double cloth.

Other method of fabric construction- knitting, braiding, lace and felt. Non-woven fabrics and their applications.

ModuleIII (6Hours)

Finishes given to fabrics- definition, importance to the consumer, classification according to durability and function. Singeing, scouring, bleaching, mercerization calendaring, sizing, de-sizing, brushing, carbonizing, crabbing, fulling, heat setting, shearing, weighting, steering, napping.

Special Finishes and Treatments-water repellent and waterproof finishes, antistatic finish, anti-slip finish, flame retardant finishes, crease resistant finishes, durable press and shrink resistant finishes.

Module IV (8 Hours)

Dyeing-Stages of dyeing- fibrestage, yarn dyeing, fabric, cross, union dyeing and product stage. Method of dyeing- batch dyeing, reeldyeing, jig dyeing and package dyeing.

Printing- Direct roller printing, block printing, duplex printing, discharge printing, screenprinting-flat androtary, resist, batikandtie-dye.

ModuleV (Practical) (16 Hours) Embroidery

Embroidery tools and techniques, embroidery threads and their classification, selection of threads, needle and cloth, tracing techniques, ironing and finishing of embroidered articles.

Basic Hand Embroidery. Basic and two variations of r u n n i n g stitch, backstitch, stemstitch, chainstitch, lazy daisy stitch, button hole stitch, feather stitch, herring bone stitch, knot stitch, satin stitch and cross stitch.

Traditional Embroidery- Origin, application & colours. Kantha, Chikan, Kasuti, Zardosi(Fourvariations), Kutchand Mirrorwork (Twovariations).

ModuleVI (Practical) (16Hours) Surface Embellishment

Printing & Painting techniques:–originand applications –Block printing, Kalamkari and Patachitra.

Dyeingand weaving techniques:- Ikats, Patola, Bhandini, Laharia, Shibori, Brocade weave and Carpet weaving.

Special embellishment techniques: Batik-splash, t-janting, crackled, Tie and dye-lehariya, bandini, shibori, sunray and marbling, Block printing- vegetable block and wooden blocks, Applique(2methods), quilting(2 methods), Smocking-Chinese smocking(2 methods), honey comb, gathered with embroidery, Fabric painting(4methods), hand, Stencil- dabbing and spraying.

Suggested readings:

1. Fiber to fabric.,B.T.Corbman, Mc.GrawHill
2. From fibe rto fabrics,E.gale,Allman&SonsLtd.
3. Fiber Science and their selection.,Wingate,Prenticehall
4. Encyclopedia of textiles.,EditorsofAmericanfabricmagazine.
6.Murphy.W.S.,TextileFinishing,AbhishekPublications,Chandigarh.
7.IndianTie-DyedFabrics,VolumeIVofHistoricTextilesofIndia.Merchant: CelunionShop
8.Traditional Indian Textiles, John Gillow / Nocholas Barnard , Thames & Hudson.
9. Surfacedesignforfabric,RichardMProctor/JenniferFLew,Universityof Washington P r e s s .
10.Artof Embroidery: Historyofstyleandtechnique, LantoSynge,Woodridge
11.TheTimelessEmbroidery,HelenM,David&Charles.
12. Readers Digest, CompleteguidetoSewing,1993, Pleasantville-Nu Gail L,SearchPressLtd.
13. Barbara. S,CreativeArt ofEmbroidery,Lundon,NumblyPub.groupLtd.
14.ShailajaN,TraditionalEmbroideriesof India.,MumbaiAPHPublishing.

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Course Name: IT Literacy

Course Code: GE3B-02

Course Objective: This course is designed impart a foundational level appreciation for the implementation of IT in business and management. Students will be utilizing digital tools for communication, researching and interpreting digital information, developing advanced spreadsheets, understanding operating systems and word processing functions, supporting the evaluation, selection and application of office productivity software appropriate to a sports management context.

Module	Content	Total Hours	%age of questions	Blooms Level	Remarks (If any)
M 1	Data and Information Storage	12	20	1,2	
M2	Digital Transformation and innovation in Sports Management	10	15	1, 2	
M3	Presentation Software	08	15	1, 2	
M4	Management Information System	06	15	1, 2	
M5	DOS System commands and editors	10	15	2,3	
M6	Programs involving the use of arrays with subscripts and pointers	12	20	2, 3	
		58	100		

Detailed Syllabus:

Module 1 – Data and Information Storage – Data and Information, definition and meaning, Data Storage device: Primary storage – RAM, ROM, EEROM, PROM, EPROM; Secondary storage – direct access devices, serial access devices: hard disks, CD-ROM, DVD Central Processing Unit – Control Unit.Computer languages, machine language, assembly language and high level language, role of assembler and compiler. Storage devices, floppy disc, hard disc, CD ROM and DVD. Importance of Computer as data storage for Businessand Management. **Fundamental Hardware Applications in Sports Management –** RFID Chips, Sensors, Timing System, andtheir applications in Sports Management.

Operating System and Application Software– Meaning of software; broad classification of software; system. Software and application software; utilities. Systems software – Operating systems: Brief introduction to different types of operating systems like DOS, Windows, Unix, Linux etc.,Importanceand application of Cloud, Mobile, Artificial Intelligence in Sports Management. Use.

[Total Hours – 12]

Module 2 - Digital Transformations and Innovations– Digital Transformation and future changes, challenges in Management, factors of success, Impact of Digital media on business, new digitized innovations in modern Management. Impact of Digital media, SWOT analysis.**Role of Data Bases -**Roles, Types, Functions, Current Practice and Future Potentials, Importance of digital technology inManagement.

[Total Hours – 10]

Module 3 - Presentation Software - Power Point – Creating new presentations – Auto content wizard –Using template – Blank presentation – Opening existing presentations – Adding, editing, deleting, copying , hiding slides – Presentations – Applying new design – Adding graphics – Using headers and footers – Animations text – Special effects to create transition slides – Controlling the transition speed – Adding sounds to slides – Using action buttons. **Word processing software:** WORD – Creating a new document with templates & Wizard – Creating own document – Opening/modifying a saved document – converting files to and from other document formats – Using keyboard short-cuts & mouse – Adding symbols & pictures to documents – header and footers – Finding and replacing text – spell check and Grammar check – Formatting text - paragraph formats - adjusting margins, line space –character space – Changing font type, size – Bullets and numbering – Tables – Adding, editing, deleting tables – Working within tables – Adding, deleting, modifying rows and columns – merging & splitting cells. **Spreadsheet software -** EXCEL – Working with worksheets – cells – Entering, editing, moving, copying, cutting, pasting, transforming data – Inserting and deleting of cells, rows & columns – Workingwith multiple worksheets – switching between worksheets – moving, copying, inserting & deleting worksheets – Using formulas for quick Calculations – Working & entering a Formula – Formatting a worksheet – Creating and editing charts – elements of an Excel Chart – Selecting data to a chart – Types of chart – chart wizard – Formatting chart elements – Editing a chart – Printing charts.

[Total Hours - 08]

Module 4 - Management Information Management (MIS) - database management, data communications, transaction processing information systems, decision support systems, informationreporting systems, office automation, networks, expert systems, and systems analyses and design. **ERP**: Introduction – Need for ERP – Advantages – Major ERP Packages – Applications.

[Total Hours - 06]

Module 5 - DOS System commands and Editors (Preliminaries) used in Sports Management. **UNIX system** commands and vi (Preliminaries) – Applications in Management. **Programs to demonstrate control structure:** text processing, use of break and continue, etc. **Programs involving functions andrecursion,** Use and application in Business and Management.

[Total Hours - 10]

Module 6 - Programs involving the use of arrays with subscripts and pointers, Programs using structures and files. Applications of C Language. **Microsoft office -** Word, Excel, PowerPoint, Mail merge, Internet – Use and Applications.

[Total Hours – 12]

Suggested Readings:

1. Mano – Computer System Architecture; Pearson Education
2.Tanenbaum – Structured Computer Organization,Pearson Education
3.Martin & Powell – Information Systems: A Management Perspective; mcgraw-Hill
4.Laudon & Laudon – Management Information Systems: Pearson Education
5.Comer: Computer Networks and the Internet: Pearson Education Graham Curtis – Business Information Systems: Addison Wesley
6. Introduction to Computers with MS-Office, Leon, TMH
7. An Introduction to Database Systems - C.J. Date, Pearson Education
8. Windows 98 6 in one by Jane Calabria and Dorothy Burke – PHI

9.Using Microsoft Office 2000 by Ed, Bott – PHI

10.Enterprise Resource planning (ERP): Text and case studies by Murthy, C S V, HPH

11.Teach yourself SAP in 24 hours by George Anderson; Danielle Larocca - Pearson Education

12.Teach yourself SAP in 24 hours by George Anderson; Danielle Larocca - Pearson Education

13.Running MS – DOS by Van Wolverton, 20th Anniversary Edition

14.C Programming Language (Prentece Hall Software) by Brian W. Kernighan

15.Let Us C by Yashavant Kanetkar.

16.Data Structure Through C by Yashavant Kanetkar

17.C in depth by Deepali Srivastava and S.K.Srivastava

Paper Code: GE3B-03
Course Name - Basic Mathematics and Statistics
Paper Code: GE3B-03
Total Credit: 6
Total hours of lectures: 60 hours

Course Objective: The course is designed to provide a basic applied knowledge of mathematics. The students will be to apply the number system & basic algebra, set theory, determinants and matrices, limits, continuity, differentiation & Integration, data frequency & distribution and measures of central tendency and measures of dispersion for solving business problems.

Sl	Course Outcome	Mapped modules
1	Remembering	M1,M2,M3,M4,M5,M6
2	Understanding the course	M1,M2,M3,M4,M5,M6
3	Applying the general problem	M1,M2,M3,M4,M5,M6
4	Analyse the problems	
5	Evaluate the problems after analysing	
6	Create using the evaluation process	

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
M 1	The Number System and BasicAlgebra	8	10	1,2	
M 2	Set Theory and Permutation and Combination	10	15	1,2	
M 3	Determinants and Matrices	10	15	1,2	
M 4	Limits, Continuity,Differentiation and Integration	16	35	1,2,3	

M 5	Data, Frequency Distribution	6	10	1,2,3	
M 6	Measures of Central Tendencyand Measures of Dispersion	10	15	1,2,3	
		60	**100**		

Sl.	Topic/Module	Hour
1.	**Module 1 :** ***The Number System*** – Positive and Negative Integers, Fractions, Rational andIrrational Numbers, Real Numbers, Problems Involving the Concept of Real Numbers. ***Basic Algebra*** – Algebraic Identities, Simple Factorizations; Equations: Linear and Quadratic (inSingle Variable and Simultaneous Equations). Surds and Indices; Logarithms and Their Properties (Including Change of Base); Problems Based on Logarithms.	
2.	**Module 2** : ***Set Theory-***Introduction; Representation of sets; Subsets and supersets; Universal and Null sets; Basic operations on sets; Laws of set algebra; Cardinal number of a set; Venn Diagrams; Application of set theory to the solution of problems ***Permutations and Combinations*** – Fundamental principle of counting; Factorial notation. Permutation: Permutation of n different things; of things not all different; restricted permutations; circular permutations. Combination: different formulas on combination; complementary combination; restricted combination; Division into groups. Mixed problems on permutation and combination	7
3.	**Module 3**: ***Determinants***- Determinants of order 2 and 3; minors and cofactors; expansion of determinants; properties of determinants; Cramer's rule for solving simultaneous equations in twoor three variables ***Matrices-*** Different types of matrices; Matrix Algebra – addition, subtraction and multiplication of matrices; Singular and non-singular matrices; adjoint and inverse of a matrix; elementary row / column operations; Solution of a system of linear equations using matrix algebra. Concept of Eigen Value, Eigenvector.	7
4	**Module 4:** Differentiation: Meaning & geometrical interpretation of differentiation; standard derivatives (excluding trigonometric functions); rules for calculating derivatives; logarithmic differentiation. Integration: Meaning, Standard formulas, Substitution, Integration by parts (Excluding Trigonometric functions)	4
5.	**Module 5**: ***Data-***Collection, Editing and Presentation of Data: Primary data and secondary data; Methods of collection; Scrutiny of data. Presentation of data: textual and tabular presentations; Construction of a table and the different components of a table. Diagrammatic representation of data: Line diagrams, Bar diagrams, Pie charts and divided-bar diagrams.	7

5.	**Module 5** : ***Frequency Distributions-*** Attribute and variable; Frequency distribution of an attribute; Discrete and continuous variables; Frequency distributions of discrete and continuous variables; Bivariate and Multivariate Frequency Distributions. Diagrammatic representation of a frequency distribution: case of an attribute; case of a discrete variable: column diagram, frequency polygon and step diagram; case of a continuous variable: histogram and ogive.	7
6.	**Module 6** : ***Measures of Central Tendency-*** Definition and utility; Characteristics of a good average; Different measures of average; Arithmetic Mean; Median; Other positional measures – quartiles, deciles, percentiles; Mode; Relation between Mean, Median and Mode; Geometric and Harmonic Mean. Choice of a suitable measure of central tendency.	10
7	**Module 7:** ***Measures of Dispersion-*** Meaning and objective of dispersion; Characteristics of a goodmeasure of dispersion; Different measures of dispersion – Range, Quartile deviation, Mean deviation, Mean Absolute deviation, Standard deviation; Comparison of the different measures of dispersion. Measures of relative dispersion – Coefficient of Variation. Combined mean and standard deviation, Combined mean and standard deviation. Introduction to Skewness, Kurtosis, Moments.	10

Suggested Readings:

1. H. S. Hall & S. R. Knight – Higher Algebra; Radha Publishing House.
2. Reena Garg, Engineering Mathematics, Khanna Publishing House.
3. Sancheti& Kapoor – Business Mathematics; Sultan Chand & Company.
4. R. S. Soni – Business Mathematics – Pitambar Publishing House.
5. N G Das, Statistical Methods (Combined edition volume 1 & 2), McGraw Hill Education.
6. J K Sharma: Business Statistics, fifth edition, Vikas Publishing house.

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Paper Name: MATHEMATICS FOR COMPUTER SCIENCE PART 1Code : BSCIT103/GE3B-04

Contact: 5L+1T

Credits: 6

Allotted Hrs: 60

Course Objectives:

CO1. To understand different kind of sets, relation, various algebraic structure and their properties. CO2. To understand the base and dimension of vector space, characteristics of vector space in different dimension, linear transformation, eigenvalue and Eigen vectors..

CO3. To learn the imaginary number and imaginary roots of a equation, number in terms of i, operations of complex number i.e. addition, subtraction, conjugate, multiplication, division.

CO4. . To understand basic property of matrices and determinant, relation between matrices and vector space.

CO5. To understand the formation of series from sequence, different type of series, concept of convergence and divergence.

CO6. To understand different type of data and their distribution , presentation, operation for calculating dispersion of central tendency and dispersion.

Course Outcomes:

Sl. No.	Course Outcome	Mapped Module
1	Ability to understand the properties of various algebraic structure and relationship between them. Ability to define binary operation, group, subgroup, ring, field and their properties.	Module 1
2	Ability to understand dimension of vector space, calculation of rank and nullity, linear transformation and mapping.	Module 2
3	Ability to solve quadratic equations with complex roots, properties of i, Operation of complex number.	Module 3
4	Ability to understand several kind of of matrices, properties of determinant, calculation rank of a matix, interpretation of existence and uniqueness of solution geometrically.	Module 4
5	Ability to check convergent and divergent of different series, type of infinite series.	Module 5
6	Ability to calculate measure of central for different type of series and dispersion.	Module 6

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicabl	Remarks (If any)	Module Number	Content

				e)			
Module 1	Modern Algebra	10	20	1	11		
Module 2	Vector Space	12	25	2	11		
Module 3	Complex numbers	8	10	3	11		
Module 4	Matrices and Determinants	10	20	4	11		
Module 5	Infinite Series	8	10	5	11		
Module 6	Basic Statistics	12	15	6	11		

Module I Modern Algebra :
Group, Ring, Field 8

Module II Vector Spaces:
Vector Space, linear dependence of vectors, Basis, Dimension; Linear transformations (maps), Range and Kernel of a linear map, Rank and Nullity, Inverse of a linear transformation, Rank-Nullity theorem, composition of linear maps, Matrix associated with a linear map. 8

Module III Complex Numbers:
Complex Numbers; Conjugate of a complex number; modulus of a complex Number; geometrical representationofcomplex number; De Moivere'stheorem; n-th rootsofa complex number.6

Module IV Matrices and Determinants :
Determinants and its properties; Cramer's Rule, Definition of a matrix; Operations on matrices, inverse of a matrix; solution of equations using matrices, rank of a matrix, Basics of Vector analysis 8

Module V Infinite Series:
Convergence and divergence; series of positive terms; binomial series; exponential series; logarithmic series, Taylor's series.6

Module VI Basics Statistics:
Measures of central Tendency – Mean, Median, Mode for frequency and non-frequency distributions, Measures of dispersion – Range, Mean deviation about Mean and Median, Quartile deviation, individual and combined standard deviation; variance, coefficient of variation.**4 hours**

Paper: Soft Skill Development

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Paper Code : B3DAFM 304

Course Objective – .The objective of this Skill Certification Scheme is to enable the students to take up industry-relevant skill training that will help them in securing a better livelihood. It will help one **Learn** to communicate, listen, and work well with team members and peers. **Think** critically as a problem solver.

Course Outcome	Mapped modules
Remembering	M1, M2, M3, M4
Understanding the course	M1, M2, M3, M4
Applying the general problem	M1, M2
Analyse the problems	M4
Evaluate the problems after analysing	M3, M4
Create using the evaluation process	M3, M4

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
M 1	**Personal Skills and Social Skills**	5	25		
M 2	**Team Building and Art of Negotiation**	5	25		
M 3	**Personality Development and Interview Techniques**	5	25		
M 4	**Presentation Skills**	5	25		
		20	**100**		

Paper Code: Paper Code: B3DAFM 304
Soft Skill Development
Total Credit: 2
Total hours of lectures: 20 hours

Sl.	Topic/Module	Hour
1.	**Module 1 - Personal Skills:** • Knowing oneself – confidence building- defining strengths-thinking creative personal. • Values time and stress management. • Kinds of stress and reason/s of stress	5

	• Handling Stressful situation at a workplace **Social Skills** • Appropriate and contextual use of language – non-verbal communication, interpersonal skills, public speaking skills, Flexibility/Adaptability, Behavioural Skills • Problem Solving Skills	
2.	**Module 2- Team Building and Art of Negotiation** • Nature of the team and management, motivation training • Professional goals of the members of the group • Building relation and interpersonal communication • Negotiation and Ways of negotiation • Power of language and non-verbal communication	5
3.	**Module 3- Personality Development and Interview Techniques** • Personal grooming and business etiquettes, corporate etiquette. • Social Etiquette, role play and body language • Professional meetings over lunch/dinner • Basics of the table manner. • Telephonic etiquettes and tone and pitch of the voice • Voice mail • Goal setting • Times schedule	5
4.	**Module 4- Presentation Skills** • Group Discussion- mock Group Discussion using video recording. • Speaking skills/ Vocal Training • One's self, how to project one's self in the right frame and spirit. • Proper attire as per the situation • How to write CV or resume for jobs.	5

References/Suggested Readings:

1. Matila Trecee : Successful Communication: Allyun and Bacon Pubharkat
2. Nitin Bhatnagar, Effective Communication and Soft Skills. Pearson Education India
3. Peggy Klaus, The Hard Truth about Soft Skills
4. Eric Garner, Team Building.
5. Wendy Palmer and Janet Crawford. Leadership Embodiment

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SEMESTER-4

Paper: RIGGING

Code: B3DAFM 401

Course Objective:

1. To study the organic and inorganic rigging of humans and machines.
2. To understand advanced techniques for characters such as blend shape and facial expression setups.
3. Understand and incorporate various industry-standard rigging techniques.
4. Work in advance techniques and methodologies of 3d character rigging.

Sl	Course Outcome	Mapped modules
1	Remembering	M1, M2
2	Understanding the course	M1, M2, M3, M4
3	Applying the general problem	M3, M4
4	Analyse the problems	M3, M4
5	Evaluate the problems after analysing	M3,M4
6	Create using the evaluation process	M3, M4

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
M 1	**Rigging Basics**	6	25		
M 2	**Prop Rig**	8	25		
M 3	Biped/**Quadruped rigging**	8	25		
M 4	**Facial Rigging**	8	25		
		30	**100**		

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Paper Code: B3DAFM- 401
RIGGING
Total Credit: 4
Total hours of lectures: 30 hours

Sl.	Topic/Module	Hour
1.	**Module 1- Rigging Basics I – Inorganic/ Organic Rig** • Understanding the anatomy • Model Clean up • Nomenclature • Binding Kinematics (IK & FK), • Requirements for a clean Model, • Parenting and grouping objects using point, orient, parent constrains • Creating controllers, set driven keys etc.	4
2.	**Module 2-** Creating Skeletons • Creating joints, editing joints, parenting joints, orienting joints • Creating hierarchical structures and skeletons for biped and quadruped characters • Using IK solvers on skeletons, blending FK and IK • Creating facial setups, blend shape deformers	8
3.	**Module 3- Skinning** • Understanding Rigid Bind and Smooth Bind • Binding skeletons to characters • Painting skin weights, editing skin weights Adding influence objects and muscles	10
4.	**Module 4- Advanced Rigging** • Ik spine rig, Ik Blend shapes, • Muscles system • Ribbon IK • Set driven Key, character sets • Redirect, prune membership tools	8

Suggested Software: Autodesk Maya

Suggested Readings:

1. Animation Methods - Rigging Made Easy: Rig Your First 3D Character in Maya by David Rodriguez
2. Essential Skills in Character Rigging by Nicholas B. Zeman

3. Rig it Right! Maya Animation Rigging Concepts (Computers and People) by Tina O'Hailey
4. Introducing Autodesk Maya 2013 (Autodesk Official Training Guides) by Dariush Derakhshani,
5. Mastering Autodesk Maya 2012, by Todd Palamar (Author)

Paper: RIGGING Lab

Code: B3DAFM 491

Course Objective: Rigging is a crucial step in character development and animation. This course introduces the rules of rigging—good geometry, organization, and controls—and shows how to create joints, constraints, and connections. This course then dives into a real-world project, taking a model and building out the skeleton and the leg, foot, body, and hand controls required for effective animation. It also devotes a chapter to FK/IK switching for finer control over arm movement. Finally, learn how to attach a character mesh to your skeleton with the skinning tools in Maya—and take your skills up a notch with a time-saving mirroring technique.

Sl	Course Outcome	Mapped modules
1	Remembering	M1, M2
2	Understanding the course	M1, M2, M3, M4
3	Applying the general problem	M3, M4
4	Analyse the problems	M3, M4
5	Evaluate the problems after analysing	M3,M4
6	Create using the evaluation process	M3, M4

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
M 1	**Rigging Basics**	6	25		
M 2	Introduction to Basic Perspective	8	25		
M 3	Basic Figure Drawing	8	25		
M 4	Masses of the Figure	8	25		
		30	**100**		

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Paper Code: B3DAFM- 401
RIGGING Lab
Total Credit: 2
Total hours of lectures: 30 hours

Sl.	Topic/Module	Hour
1.	**Module 1- Rigging Basics** • Rigging small props • Ball • Gun • Cycle • Rigging a vehicle	6
2.	**Module 2- Character (Organic) Rig** • Rigging a Biped/Toon character	8
3.	**Module 3-** Advanced Skinning • Rigging a Biped/Toon character	8
4.	**Module 4- Facial Rigging** • Adding muscle deformer to character • Automated Vehicle	8

Suggested Readings:

1. Animation Methods - Rigging Made Easy: Rig Your First 3D Character in Maya by David Rodriguez
2. Essential Skills in Character Rigging by Nicholas B. Zeman
3. Rig it Right! Maya Animation Rigging Concepts (Computers and People) by Tina O'Hailey
4. Introducing Autodesk Maya 2013 (Autodesk Official Training Guides) by Dariush Derakhshani,
5. Mastering Autodesk Maya 2012, by Todd Palamar (Author)

Paper: PROP AND CHARACTER ANIMATION

Code: B3DAFM 402

Course Objective: Using the rig developed in this course how to animate a walk, create a jump, animate changes in facial expression and posture, animate a "zip out" or quick exit, and then show how to finalize and render the complete project. Throughout the course, it touches on animation principles such as squash and stretch, exaggeration, follow-through, and overlapping action.

Sl	Course Outcome	Mapped modules
1	Remembering	M1, M2
2	Understanding the course	M1, M2, M3, M4

3	Applying the general problem	M3, M4
4	Analyse the problems	M3, M4
5	Evaluate the problems after analysing	M3,M4
6	Create using the evaluation process	M3, M4

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
M 1	**Introduction to Animation**	6	25		
M 2	**Props Animation**	8	25		
M 3	Character Animation I	8	25		
M 4	Character Animation II	8	25		
		30	**100**		

PROPS & CHARACTER ANIMATION

Total Credit: 4

Total hours of lectures: 30 hours

Sl.	Topic/Module	Hour
1.	**Module 1- Introduction to Animation** • Theory on types of animations • Understanding animation films and Live ,Action Movies • Importance and Difference between object and character animation • Understanding the Animation Interface • Animation principles, theory with examples – Theory • Creating Layouts for animation	4
2.	**Module 2- Props Animation** • Animating using the Set key • Modifying keys on the timeline • Modifying keys on the dope sheet • Modifying keys in the graph editor • Working with the time editor • Animate objects along spline paths • Visualize animation	8
3.	**Module 3-** Character Animation I	10

	• Understanding timing and spacing Assignment: Bouncing ball • Understanding the weights and balances of primitive object motions. • Making of animation with multiple primitive objects as the both get co-ordinates in motion as if combination in motion. • Understanding posing, line action to various proportionate characters. Theory	
4.	**Module 4-** Character Animation II • Body mechanics and character locomotion defining in the manner of blocking, breakdowns, actions. Assignment: walk cycles (stationary) in 32 Frames • Body mechanics and character locomotion defining in the manner of blocking, breakdowns, primary. Assignment: run cycles(stationary) in 16 Frames	8

Suggested Readings:

1. Animation Methods - Rigging Made Easy: Rig Your First 3D Character in Maya by David Rodriguez
2. Essential Skills in Character Rigging by Nicholas B. Zeman
3. Rig it Right! Maya Animation Rigging Concepts (Computers and People) by Tina O'Hailey
4. Introducing Autodesk Maya 2013 (Autodesk Official Training Guides) by Dariush Derakhshani,
5. Mastering Autodesk Maya 2012, by Todd Palamar (Author)
6. Animator's Survival Kit – Richard Williams

Paper: PROP AND CHARACTER ANIMATION Lab

Code: B3DAFM 492

Course Objective: Rigging is a crucial step in character development and animation. This course introduces the rules of rigging—good geometry, organization, and controls—and shows how to create joints, constraints, and connections. This course then dives into a real-world project, taking a model and building out the skeleton and the leg, foot, body, and hand controls required for effective animation. It also devotes a chapter to FK/IK switching for finer control over arm movement. Finally, learn how to attach a character mesh to your skeleton with the skinning tools in Maya—and take your skills up a notch with a time-saving mirroring technique.

Sl	Course Outcome	Mapped modules
1	Remembering	M1, M2
2	Understanding the course	M1, M2, M3, M4
3	Applying the general problem	M3, M4
4	Analyse the problems	M3, M4

5	Evaluate the problems after analysing	M3,M4
6	Create using the evaluation process	M3, M4

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
M 1	**Rigging Basics**	6	25		
M 2	Introduction to Basic Perspective	8	25		
M 3	Basic Figure Drawing	8	25		
M 4	Masses of the Figure	8	25		
		30	**100**		

PROPS & CHARACTER ANIMATION Lab

Total Credit: 2

Total hours of lectures: 40 hours

Sl.	Topic/Module	Hour
1.	**Module 1-** • Reference video\ footages shown on types of animation • Reference video\ footages shown on Understanding animation Films and Live, Action movies • Reference video\ footages shown to understand difference between prop and character animation	6
2.	**Module 2-** • Bouncing ball	8
3.	**Module 3- Character Animation I** • Working With Simple Pendulum & Follow Through • Animation With Basic Primitive Objects See saw	8
4.	**Module 4- Character Animation II** • Making Of Walk Cycle With Human Character Blocking • Making Of Walk Cycle With Human Character Primary • Making Of Walk Cycle With Human Character Secondry • Making Of Run Cycle With Human Character Blocking • Making Of Run Cycle With Human Character Praimary & Secondry • Assignment: run cycles(stationary) in 16 Frames	8

Suggested Software – Autodesk Maya

Suggested Readings:

1. Animation Methods - Rigging Made Easy: Rig Your First 3D Character in Maya by David Rodriguez
2. Essential Skills in Character Rigging by Nicholas B. Zeman
3. Rig it Right! Maya Animation Rigging Concepts (Computers and People) by Tina O'Hailey
4. Introducing Autodesk Maya 2013 (Autodesk Official Training Guides) by Dariush Derakhshani,
5. Mastering Autodesk Maya 2012, by Todd Palamar (Author)

DYNAMICS

BSC 3DAFM 403

Course Objective: The course is designed to learn Maya dynamics skill set needed to make animation projects more realistic and believable. The students will understand atmospheric effects like wind and rain, ocean waves and ripples, as well as the effects of fire and candles, explosions, crumbling, and much more. This course will introduce them to Dynamics, Dyna motive solver, Particles, Emitters, Fields: Air, Drag, Gravity, Newton, Turbulence, Vortex, Volume, Particle collusions, Particle cache, Goals, Soft bodies, Springs, Rigid bodies, Constraints, Effect: Fire, Smoke, Fireworks, Lightening, Shatter, Curve flow, Surface flow, Rendering particles and effects, Maya Paint Effects, baking simulations, Render types. Fluid Effects Introduction to Fluids, Fluid field interaction, Fluid attributes.

SI	Course Outcome	Mapped modules
1	Remembering	M1, M2
2	Understanding the course	M1, M2, M3, M4
3	Applying the general problem	M3, M4
4	Analyse the problems	M3, M4
5	Evaluate the problems after analysing	M3,M4
6	Create using the evaluation process	M3, M4

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
M 1	**Particle System**	8	25		
M 2	**Dissipation**	7	25		

M 3	**Instancing**	6	25		
M 4	**Fluids**	9	25		
		30	**100**		

Sl.	Topic/Module	Hour
1.	**Module 1- Particle System** • Particles, Fields • Emitters • Collision Models Particle Collision Events • Controllers • Connectable and Connections • Soft Bodies • Springs • Rigid Bodies. • Dynamics of rigid and soft surface simulations: Cloth, hair, fur, paper and solid elements. Physics of explosions: Source, Placement, direction, reaction.	8
2.	**Module 2- Dissipation** • Fluid ,particles dynamic simulation theory and stages • Understanding Smoke and powder dust: Density, turbulences, color and dissipations. Simulation of a disintegration effect using Maya's powerful ncloth particles and fluid dynamics tools. • Breaking an efficient mesh for disintegration purposes and emitting the detailed secondary particles and fluid simulations. • Creating galaxy with milky way using reference • Working with Per-Particle attributes (RGBPP, Opacity PP) and Rand Expression Making dust while blast / destructions. • Collisions Expression, Collision Position, Collision U and V Attributes, Dynamic texture marks Forces: Air, Radial, Vortex, Nuton, Uniform, Gravity	7
3.	**Module 3- Instancing** • Instancing Paint Effects, Light with Optic Effects, Animated Object for crowd Using Gnomon MEL Scripts Instancing Paint Effects, Light with Optic Effects, Animated Object for crowd Using Gnomon MEL Scripts.Falling leafs using instances and rendering using software, hardware and compositing.Creating Sprite images, Sprite Wizard, Smoke Sprite and Per Particle Attributes Sprite Twist PP, Scale PP, Velocity PP, Mass, RGB PP, Opacity PP, Applying Turbulence and Animating attributes. o Particle Instancer	6

4.	**Module 4- Fluids** • Generate fluid simulations from scratch and all of the key attributes in the fluid shape node.dynamic simulation settings, adjusting temperature and fuel, converting the fluid simulation into geometry, and working with the shading attributes to name a few. • Fluid Containers (2D and 3D in Maya Fluids), different attributes in the Fluid Shape node and the workflow when creating fluid simulations.	9

Sggested Softwares – Autoesk Maya

Ref Book:

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 Leaning Tools, Sybex; 1 edition, 2005.
4. Steve Wright, Compositing Visual Effects, Second Edition: Essentials for the Aspiring Artist, Focal Press; 2 edition, 2011.

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DYNAMICS Lab
BSC 3DAFM 493

Course Objective: The course is designed to Navigate the complex structure of Maya Dynamics. Connect seemingly unconnected areas of Maya such as paint effects, soft bodies and particles. Able to create a variety of effects using simple techniques. Comprehend how to use commonly used but little understood expressions.

SI	Course Outcome	Mapped modules
1	Remembering	M1, M2
2	Understanding the course	M1, M2, M3, M4
3	Applying the general problem	M3, M4
4	Analyse the problems	M3, M4
5	Evaluate the problems after analysing	M3,M4
6	Create using the evaluation process	M3, M4

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
M 1	**Particle System**	12			
M 2	**Dissipation**	8			
M 3	**Instancing**	8			
M 4	**Fluids**	12			
		40	**80**		

Sl.	Topic/Module	Hour
1.	**Module 1- Particle System** • Understanding Physics and natural forces and fields • Analysing timing and colours • article Simulation (Fire, Tornedo, Rain) • Rigid Body Simulation • Concept of Soft Body • Creating particle portal • Creating particle flow with fields	12

	• Creating galaxy with milky way using reference	
2.	**Module 2- Dissipation** • Working with Per-Particle attributes (RGBPP, Opacity PP) and Rand Expression • Making dust while blast / destructions • Collisions Expression, Collision Position, Collision U and V Attributes, Dynamic texture marks • Forces: Air, Radial, Vortex, Nuton, Uniform, Gravity • Creating dispersion effect of objects	8
3.	**Module 3- Instancing** • Instance Particle • Instancing Paint Effects, Light with Optic Effects, Animated Object for crowd Using Gnomon MEL Scripts • Falling leafs using instances and rendering using software, hardware • Creating Sprite images, Sprite Wizard, Smoke Sprite and Per Particle Attributes Sprite Twist PP, Scale PP, Velocity PP, Mass, RGB PP, Opacity PP, Applying Turbulence and Animating attributes • Creating instancing with different obeject.	8
4.	**Module 4- Fluids** • 2d and 3d fluid emitter • Fluid Effects • Making dust while blast • Creating sprite smoke using image sequences for blast and destructions • Smoke Preset (RGB to HSV, Scale Factor, Twist Factor), Smoke Preset (Opacity Ramp color entry list and rate) • Creating smoke preset using expressions and custom attributes • Bridge blast with fire, dust, smoke, derbies. • 2D and 3D container Attributes, dynamic Attributes, color and Method and Ramp options, Applying forces, Smoke, Fire. • Creating character foot dust, cigrattte smoke,car smoke and fog creation • Creating Explosion	12

Suggested Software – Autodesk Maya

Ref Book:

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 Leaning Tools, Sybex; 1 edition, 2005.

4. Steve Wright, Compositing Visual Effects, Second Edition: Essentials for the Aspiring Artist, Focal Press; 2 edition, 2011.

GENERAL ELECTIVE (Any 1 from the Basket)

Course Name: Operating Systems with LINUX
Course Code: GE4B-01
Mode-Offline/ Blended

Course Objective: The course is designed to understand the fundamental utilities which are required on daily basis to work on a modern operating system. The course will cover an introduction on the policies for scheduling, deadlocks, memory management, synchronization, system calls, and file systems. On successful completion of this course students will be able to make effective use of Linux utilities to solve problems

Sl	Course Outcome	Mapped modules
1	Remember fundamental components of a computer operating system	M1
2	Remember and Understand policies for scheduling, deadlocks, memory management, synchronization, system calls, and file systems	M2, M3
3	Understand the basic commands of Linux operating system	M4
4	Understand & Apply the knowledge to create file system and directories	M1, M4, M5
5	Apply the knowledge to create processes, perform pattern matching	M1, M4, M6
6	Application of the gathered knowledge to develop simple programs	M1, M4, M5, M6

Module	Content	Total Hours	%age of questions	Blooms Level	Remarks (If any)
M 1	Introduction	4	5	1	
M 2	Process	10	20	1,2	
M 3	Resource Manager	6	15	2	
M 4	Introduction to Unix OS	12	20	2,3	
M 5	Files	12	20	3	
M 6	Shells & Process	12	20	4	
		56	100		

Detailed Syllabus:
Paper: Operating system with LINUX
Module 1: Introduction
Importance of OS, Basic concepts and terminology, Types of OS, Different views, Journey of a

command execution, Design and implementation of OS.
(Total hours -4)

Module 2: Process (10L)
Concept and views, OS view of processes, OS services for process management, Scheduling algorithms, Performance evaluation; Inter-process communication and synchronization, Mutual exclusion, Semaphores, Hardware support for mutual exclusion, Queuing implementation of semaphores, Classical problem of concurrent programming, Critical region and conditional critical region, Monitors, Messages, Deadlocks.
(Total hours -10)

Module 3: Resource Manager
Memory management, File management, Processor management, Device management.
(Total hours -6)

Module 4: Introduction to UNIX Operating System
Introduction to UNIX UNIX operating system, UNIX architecture: Kernel and Shell, Files and Processes, System calls, Features of UNIX, POSIX and single user specification, Internal and external commands.
Utilities of UNIX Calendar (cal), Display system date (date), Message display (echo), Calculator (bc), Password changing (password), Knowing who are logged in (who), System information using uname, File name of terminal connected to the standard input (tty)
UNIX file system File system, Types of file, File naming convention, Parent – Child relationship, HOME variable, inode number, Absolute pathname, Relative pathname, Significance of dot (.) and dotdot (..), Displaying pathname of the current directory (pwd), Changing the current directory (cd), Make directory (mkdir), Remove directories (rmdir), Listing contents of directory (ls), Very brief idea about important file systems of UNIX: /bin, /usr/bin, /sbin, /usr/sbin, /etc, /dev, /lib, /usr/lib, /usr/include, /usr/share/man, /temp, /var, /home
(Total hours – 6)

Assignment –
LINUX Utilities - Calendar, Display system date, Message display, Calculator, Password changing, Knowing who are logged in, Knowing System information
Directory creation, removal, listing, navigation –
Displaying pathname of the current directory (pwd), Changing the current directory (cd), Make directory (mkdir), Remove directories (rmdir), Listing contents of directory (ls and its options), Absolute pathname, Relative pathname, Using dot (.) and dotdot (..)
(**Total Hours – 6)**

Module 5: Files
Ordinary file handling Displaying and creating files (cat), Copying a file (cp), Deleting a file (rm), Renaming/ moving a file (mv), Paging output (more), Printing a file (lp), Knowing file type (file), Line, word and character counting (wc), Comparing files (cmp), Finding common between two files (comm), Displaying file differences (diff), Creating archive file (tar), Compress file (gzip), Uncompress file (gunzip), Archive file (zip), Extract compress file

(unzip), Brief idea about effect of cp, rm and mv command on directory. File attributes File and directory attributes listing and very brief idea about the attributes, File ownership, File permissions, Changing file permissions – relative permission & absolute permission, Changing file ownership, Changing group ownership, File system and inodes, Hard link, Soft link, Significance of file attribute for directory, Default permissions of file and directory and using umask, Listing of modification and access time, Time stamp changing (touch), File locating (find).

(Total Hours – 6)

Assignment –

Ordinary File Handling - Displaying and creating files, Copying a file, Deleting a file, Renaming/
moving a file, Paging output, Knowing file type, Line, word and character counting (wc), Comparing files, Finding common between two files, Displaying file differences File attributes – File and directory attributes listing, File ownership, File permissions, Changing file permissions – relative permission & absolute permission, Changing file ownership, Changing group ownership, File system and inodes, Hard link, Soft link, Default permissions of file and directory and using umask, Listing of modification and access time, Time stamp changing, File locating

(Total Hours – 6)

Module 6: Shell and Process

Shell Interpretive cycle of shell, Types of shell, Pattern matching, Escaping, Quoting, Redirection, Standard input, Standard output, Standard error, /dev/null and /dev/tty, Pipe, tee, Command substitution, Shell variables

Process Basic idea about UNIX process, Display process attributes (ps), Display System processes, Process creation cycle, Shell creation steps (init ->getty -> login -> shell), Process state, Zombie state, Background jobs (& operator, nohup command), Reduce priority (nice), Using signals to kill process, Sending job to background (bg) and foreground (fg), Listing jobs (jobs), Suspend job, Kill a job, Execute at specified time (at and batch)

(Total Hours – 6)

Assignment –

Shell - Types of shell, Pattern matching, Escaping, Quoting, Redirection, Pipe, tee, Command substitution, Shell variables

Process - Display process attributes, Display System processes, Background jobs, Reduce priority, Sending job to background and foreground, Listing jobs

(Total Hours – 6)

Suggested Readings:

1. Operating Systems, Galvin, John Wiley
2. Operating Systems, Milankovic, TMH
3. UNIX-Concepts & Applications, Sumitava Das, TMH
4. Learning UNIX Operating System, Peek, SPD/O'REILLY
5. Understanding UNIX, Srirengan, PHI 4. Essentials Systems Administration, Frisch, SPD/O'REILL

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Module No.	Content	Tota l Hours	%age of questions	Covered CO	Covered PO	Blooms Level (if applicable)	Remarks (if any)

(GE4B-02): ENTREPRENEURSHIP THEORY & PRACTICE

Credit Point: 6Total

Credit Hours: 60 Hrs.

Course Objective

1. To understand the function of the entrepreneur in the successful, commercial application of innovations.

2. To investigate methods and behaviours used by entrepreneurs to identify business opportunities and put them into practice.

3. To discuss how ethical behaviour impacts on business decisions for a selected business startup.

4. To get better knowledge about the necessary traits for an Entrepreneurs.

5. To build and check the feasibility of business projects and the development of the projects for the same.

6. To provide the overview of Business Ethics and its importance.

7. To understand the various Management and Business scenarios of Ethics.

8. To get the overall knowledge on corporate culture and its impact

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Module I Unit 1	**Introduction to Entrepreneurship**	6	1	1	8		
			0				
Module	Entrepreneurial	8	1	2	8		
I Unit	Behaviour		3				
2							
Module I Unit	Entrepreneurial Traits	8	1 3	3	8		
3							
Module	Project	12	2	4	8		
I Unit	Feasibility		0				
4	Analysis						
Module	Creativity	6	1	5	8		
II			0				
Unit 5							
Module II Unit 6	Innovation	8	1	6	8		
			4				
Module II Unit 7	Understanding the Market	6	1	7	8		
	ng the		0				
	Market						
Module	Resource	6	1	8	8		
II	Mobilization		0				
Unit 8							

Module I

Unit1: Introduction to Entrepreneurship [4L]

Theories of Entrepreneurship, Role and Importance of Entrepreneur in Economic Growth.

Unit 2: Entrepreneurial Behaviour [10L]

Entrepreneurial Motivation, Need for Achievement Theory, Risk-taking Behavior, Innovation and Entrepreneur

Unit 3: Entrepreneurial Traits[8L]

Definitions, Characteristics of Entrepreneurs, Entrepreneurial Types, Functions of Entrepreneur

Unit 4: Project Feasibility Analysis [12L]

Business Ideas – Sources, processing; Input Requirements, Sources of Financing, Technical Assistance, Marketing Assistance, Preparation of Feasibility Reports, Legal Formalities and Documentation.

Module II

Unit 5: Creativity [8L]

Introduction – Meaning - Scope – Types of Creativity – Importance of Creativity – Steps of Creativity

Unit 6: Innovation [8L]

Introduction –Steps in Innovation – Stages of of Innovation – Technology aspects in Innovation.

Unit 7: Understanding the Market [4L]

Types of Business: Manufacturing, Trading and Services – Market Research - Concept, Importance and Process - Market Sensing and Testing

Unit 8: Resource Mobilization [6L]

Types of Resources - Human, Capital and Entrepreneurial tools and resources- Selection and utilization of human resources and professionals like Accountants, Lawyers, Auditors, Board Members, etc. Role and Importance of a Mentor- Estimating Financial Resources required. Methods of meeting the financial requirements – Debt vs. Equity

Suggested Readings:

1. Entrepreneurship, Arya Kumar, Pearson.
2. Introducing Entrepreneurship Development, Chakraborty, Tridib, Modern Book Agency.
3. Entrepreneurial Policies and Strategies, Manimala, M.J., TMH
4. Everyday Entrepreneurs - The harbingers of Prosperity and creators of Jobs , Dr. Aruna Bhargava.

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Course Name: Basics of Computing Code: GE4B-03

Mode- Offline/ Blended

Credits: 6

OBJECTIVE: The course is a right blend of Basic Computing and Mathematics, which enables students to gather important basic knowledge of Computers and Mathematics. This course will bridge the fundamental concepts of computers and mathematics with the present level of knowledge of the students. After completing the course students will be able to understand the fundamentals of computer, different problem solving techniques, basics of operating systems, different office operation tools, differential and integral calculus.

Duration: 60 Hours. (Theory: 40 hours + Practical: 10 hours + Tutorial: 10 hours)

Course Outcomes (CO):

Sl.	Course Outcome	Mapped modules
1.	Bridge the fundamental concepts of computers with the present level of knowledge of the students	Module-I
2.	Familiarize Organization, Peripheral Devices, Hardware and Software	Module-I
3.	Understand problem solving techniques, basics of Unix and Windows O.S. and its operations	Module-II, Module-III
4.	Demonstrate the Office Automation Tools	Module-III, Module-IV
5.	Understand Differential Calculus and Integral Calculus	Module-V, Module-VI

Module	Content	Total Hours	%age of questions	Blooms Level	Remarks (If any)
Module-I	Fundamentals of Computing	10	15	1,2	Theory
Module-II	Approaches to Problem Solving	5	25	3	Theory
Module-III	Operating System and Services in O.S.	5	15	3	Theory
Module-IV	Office Automation Tools	10	10	4	Lab
Module-V	Differential Calculus	18	20	5	Theory
Module-VI	Integral Calculus	12	15	5	Theory

Detailed Syllabus:

Module-I: Introduction to Computers [10]

Introduction and Characteristics, History and Evolution, **Generations of Computer** (I-V), **Organization of Computers**, Block Diagram of a Computer, Von Neumann Architecture,

Applications of Computers in Various Fields, **Input Devices** and functions of the different units, **Output Devices** and functions of the different units, Memory Unit, CPU (ALU+CU) , **Computer Languages** – Machine Language, Assembly Language, High-level Language, Features of Good Language. **Language Translators** - Compiler, Interpreter, Assembler, **Memories** [Memory Hierarchy], Registers [Types of Registers], Cache Memory, **Primary Memory** - RAM, DRAM and SRAM, ROM, ROM BIOS/ Firmware, Types of ROM, **Secondary Memory** - Hard Disk, Structure of a Hard Disk, how data is stored in a hard disk, concept of tracks, sectors, clusters, cylinders, formatting of hard disk (Low Level Formatting and High Level Formatting), Blu-Ray Disc [Data Storage Mechanism], Flash Drives/e-MMC, **Concept of Hardware & Software**, System Software, Operating System, Functions and Types of O/S, Utility Programs, Communication Software, Performance Monitoring Software, Application Software

MODULE-II: Approaches to Problem Solving[5]

Approaches To Problem Solving, Algorithm : Introduction, Definition, Characteristics, Expressing Algorithm and General Approaches in Algorithm Design, Analysis of Algorithms, Advantages and disadvantages, Examples **Flowchart:** Definition, When to Use Flowcharts, Flowchart Symbols and Guidelines,Types of Flowcharts, Examples, Advantages and Disadvantages, Limitations of using Flowcharts.

MODULE-III: Operating System and Services in O.S.[5]

Fundamentals of Operating System, Types of O.S. and Functions, Structure of O.S., Components, Conceptsof Multitasking, Multiprogramming, Timesharing, Basics of Memory Management.

Introduction to Unix/DOS Operating system – History, Files and Directories, Internal and ExternalCommands, Batch Files

Windows Operating Environment - Features of MS – Windows, Control Panel, Taskbar, Desktop, WindowsApplication, Icons, Windows Accessories, Notepad, Paintbrush.

MODULE-IV: Office Automation Tools - Skill Enhancement MS Office[10]

i) **Microsoft Word** - Page Layout, Fonts, Word Art, Paragraph Styling, Indentation, Mail Merge, NavigationPane, Macro, Themes, Tables, Idea About Saving Files In Different Formats, Font Embedding.

ii) **Microsoft Excel** - Basic functionality of MS-Excel, Functions - Mathematical, Statistical and Data Retrieval(Vlookup, Hlookup), Goal Seek, Pivot Table, Cross Worksheet Operations

iii) **Microsoft PowerPoint** - Types of Layouts, Using The Slide Master View, Animations, Slide Transition,Design and themes.

MODULE V: Differential Calculus [18]

Function of single variable: Explicit and Implicit Function, Parametric Equations, Single valued and Multiple Valued Function, Monotonic and Bounded function, Representation of functions Graphically, Limit:Definition, Cauchy General Principle for Convergence of Limit, Simple Examples, Continuity: Definition, Example on Simple and Jump Discontinuity
Differentiation: Definition, Derivative of Algebraic, Exponential, Logarithmic, Trigonometric, Inverse functions (Up to Second order), Logarithmic Differentiation, Derivative of Products, Examples.
Mean Value Theorem: Rolle's Theorem, Lagrange and Cauchy MVT (Statement Only) with applications.Taylor's Series.
Indeterminate Forms: L' Hospital Rule. Examples.

MODULE VI:
Integral
Calculus[12]

Integrations: Indefinite Integrals, Integration Rules, Integration by Parts, (Algebraic Rational, Exponential, Trigonometric functions), Definite Integrals: Definition, Geometrical Interpretation, Definite Integral as Limit of a Sum, Area of Plain Regions.

Suggested Readings:

- Satish Jain, M. Geetha, Kratika, Microsoft Office 2010, BPB
- Dr. Milind M. Oka, Computer Fundamentals, Everest Publication House
- V. Rajaraman, Computer Basics and C Programming, Eastern Economy Edition
- Dr. A. K. Gupta, Management Information System, S. Chand Publisher
- Kogent Learning Solutions INC, Windows 7 in Simple Steps, dreamtech Press
- B. C. Das, B. N. Mukherjee, Differential Calculus, U. N. Dhar and Sons Pvt. Ltd.
- B. C. Das, B. N. Mukherjee, Integral Calculus, U. N. Dhar and Sons Pvt. Ltd.

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Paper: VISUAL COMMUNICATION

Code: B3DAFM 404

Course Objective:

- Apply appropriate communication skills across settings, purposes, and audiences.
- Demonstrate knowledge of communication theory and application.
- Demonstrate critical and innovative thinking. 2. Display competence in oral, written, and visual communication. 3. Apply communication theories.

Sl	Course Outcome	Mapped modules
1	Remembering	M1, M2
2	Understanding the course	M1, M2, M3, M4
3	Applying the general problem	M3, M4
4	Analyse the problems	M3, M4
5	Evaluate the problems after analysing	M3,M4
6	Create using the evaluation process	M3, M4

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
M 1	**Rigging Basics**	6	25		
M 2	Introduction to Basic Perspective	8	25		
M 3	Basic Figure Drawing	8	25		
M 4	Masses of the Figure	8	25		
		30	**100**		

VISUAL COMMUNICATION
Total Credit: 2
Total hours of lectures: 20 hours

Sl.	Topic/Module	Hour

1.	**Module 1** • Need for and the Importance of Human and Visual Communication. Communication a expression, skill and process, Understanding Communication: SMRC-Model • Communication as a process. Message, Meaning, Connotation, Denotation Culture/Codes etc Levels of communication: Technical, Semantic, and Pragmatic. The semiotic landscape: language and visual communication, narrative representation	5
2.	**Module 2 -** Fundamentals of Design: Definition. Approaches to Design, Centrality of Design, Elements of Design: Line, Shape, Space, Colour, Texture. Form Etc. Principles of Design: Symmetry. Rhythm, Contrast, Balance Mass/Scale etc. Design and Designers (Need, role, process, methodologies etc.)	5
3.	Module 3 - Principles of Visual and other Sensory Perceptions. Colour psychology and theory (some aspects) Definition, Optical / Visual Illusions Etc Various stages of design process- problem identification, search for solution refinement, analysis, decision making, and implementation.	5
4.	**Module 4 –** Basics of Graphic Design. Definition, Elements of GD, Design process-research, a source of concept, the process of developing ideas-verbal, visual, combination & thematic, visual thinking, associative techniques, materials, tools (precision instruments etc.) design execution, and presentation	5

Suggested Readings:

1.Communication between cultures - Larry A. Samovar, Richard E. Porter, Edwin R. McDaniel & Carolyn Sexton Roy, Monica Eckman, USA, 2012

2.Introduction to Communication studies - John Fiske & Henry Jenkins 3rd edition, Routledge, Oxon 2011

3. An Introduction to communication studies - Sheila Steinberg, Juta & Co., Cape Town, 2007

4. One World Many Voices: Our Cultures - Marilyn Marquis & Sarah Nielsen, Wingspan Press, California, 201

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SEMESTER - 5

Paper: PRE PRODUCTION CONTENT DEVELOMENT

Code: B3DAFM 501

Course Objective: This course will emphasise on idea generation and leading it to story development and script writing for making films.one will learn how to develop strong characters and tell stories for animation: parallel processes that result in a great film. It will also focus on learning how to create a visual sense of depth in your digital painting, as well as how to create a visual sense of story. They illustrate the script, plan shots, demonstrate action, and maintain continuity between scenes. The students will be able to make their own storyboards and animatic.

Sl	Course Outcome	Mapped modules
1	Remembering	M1, M2
2	Understanding the course	M1, M2, M3, M4
3	Applying the general problem	M3, M4
4	Analyse the problems	M3, M4
5	Evaluate the problems after analysing	M3,M4
6	Create using the evaluation process	M3, M4

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
M 1	**- Idea Generation , Story Writing and ScriptWriting**	10	25		
M 2	Acting for Animation & Character Performance	10	25		
M 3	Different Aspects of acting	10	25		
M 4	Creative Approach	10	25		
		40	**100**		

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PRE-PRODUCTION CONTENT DEVELOMENT

Total Credit: 4

Total hours of lectures: 30 hours

Sl.	Topic/Module	Hour
1.	**Module 1 - Idea Generation , Story Writing and ScriptWriting** • Examples of how great ideas were conceived. Show / tell / play with different methods of idea generation. Identifying problems, Lists, Sketching, Mind maps, Storyboards example, understanding visuals. • Different techniques of idea generation (clustering, free writing, inspiration from book, real life story, paragraphs, back story, e.t.c),Idea generation for film, advertisement, computer games. Case studies • Story writing,3, Act structure of story, Plot, Climax, conflicts, types of conflict. Sources of story line, writing the story line from classical animation. Story, elements of story, expansion, dialogues, Interaction through dialogue, • Script and its elements, theme & genre of script, Script breakdown, writing a script for animation film	6
2.	**Module 2 – Designing Character, Set and Props** • Designing of characters and creatures(can be for games / films); character description, different types of character designs – toon character, realistic character ,fantasy characters , anthropomorphic characters changing the head designs or proportions of the body, costume variations, how to make turnarounds, expression sheets, key pose sheets • Designing of vehicles and props. – drawing them in different views like top, side back front, understanding the textures, etc. • Designing environments – time period and settings of the character is crucial to creating of environments, using perspectives and compositional elements to design the environments, environment development into two sections, mood and development; For mood you are using color, lighting, shapes and atmosphere to create a feel for the world, creating a digital environment	10
3.	Module 3 - Storyboarding • Understanding aspect ratio and frame rates , story panels • Developing your film grammar – Acts, sequences and scenes; Types of shots and camera moves; • Storyboarding live action vs. animation • Staging a composition • Direction of Actions • Lighting and Depth • Posing and staging • Do's and don'ts	10

	• Creating a finished sequence • Character development • zoom in/zoom out , truck in/truck out, camera transitions, the cut & Continue, fade in/fade out, dissolve, blur, pan or zip pan	
4.	**Module 4 – Audio for animation and Animatics** • Adding audio or voice over with timings • Create final animatic	10

Suggested Softwares – Adobe Photoshop
Adobe Fresco
Adobe Illustrator
Stroryboard Pro

Suggested Reading:

1. The Art of Layout and Storyboarding (Author: Mark Byrne)
2. Shot by shot (Author : Steven D Katz)
3. Animation Script to Screen (Author: Shamus Culhane
4. Characters and View Point By Orson Scott Card
5. 4. Illusion of Life By Ollie Johnston & Frank Thomas
6. 5. Figure drawing without a model- by Ron Tiner
7. 6. Creating Characters with Personality: For Film, TV, Animation, Video Games and Graphics
8. Novels By Tom Ban Croft and Glen Keane
9. 7. Creating Animated Cartoons with Character: A Guide to Developing and Producing Your
10. Own Series for TV, the Web, and Short Film By Joy Murray
11. 8. Animation: From Pencil to Pixels by Tony White

Paper: PRE PRODUCTION CONTENT DEVELOMENT Lab

Code: B3DAFM 591

Course Objective: : This course will emphasise on idea generation and leading it to story development and script writing for making films.one will learn how to develop strong characters and tell stories for animation: parallel processes that result in a great film. It will also focus on learning how to create a visual sense of depth in your digital painting, as well as how to create a visual sense of story. The students will be able to make their own storyboards and animatic.

Sl	Course Outcome	Mapped modules
1	Remembering	M1, M2
2	Understanding the course	M1, M2, M3, M4
3	Applying the general problem	M3, M4

4	Analyse the problems	M3, M4
5	Evaluate the problems after analysing	M3,M4
6	Create using the evaluation process	M3, M4

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
M 1	Aspects of acting and direction	3	25		
M 2	Acting for Animation & Character Performance	3	25		
M 3	Different Aspects of acting	4	25		
M 4	Creative Approach	10	25		
		20	**100**		

Paper Code: B3DAFM- 591

PRE PRODUCTION CONTENT DEVELOMENT Lab

Total Credit: 2

Total hours of lectures: 40 hours

Sl.	Topic/Module	Hour
1.	**Module 1 –Idea Generation , Story Writing and ScriptWriting** • Creating a final script out of the concept	4
2.	**Module 2 -** • Preparing character model pack, • Props & vehicle model pack • Environment model pack	8
3.	**Module 3 - Storyboarding** • Creating a storyboard	10
4.	**Module 4 – Audio for animation and Animatics**	8

	• Creating final animatic with sound	

Suggested Reading:

1. The Art of Layout and Storyboarding (Author: Mark Byrne)
2. Shot by shot (Author : Steven D Katz)
3. Animation Script to Screen (Author: Shamus Culhane
4. Characters and View Point By Orson Scott Card
5. Illusion of Life By Ollie Johnston & Frank Thomas
6. Figure drawing without a model- by Ron Tiner
7. Creating Characters with Personality: For Film, TV, Animation, Video Games and Graphics
8. Novels By Tom Ban Croft and Glen Keane
9. Creating Animated Cartoons with Character: A Guide to Developing and Producing Your
10. Own Series for TV, the Web, and Short Film By Joy Murray
11. Animation: From Pencil to Pixels by Tony White

Paper: 2D DIGITAL ANIMATION

Code: B3DAFM 502

Course Objective: This course will emphasise on idea generation and leading it to story development and script writing for making films.one will learn how to develop strong characters and tell stories for animation: parallel processes that result in a great film. It will also focus on learning how to create a visual sense of depth in your digital painting, as well as how to create a visual sense of story. They illustrate the script, plan shots, demonstrate action, and maintain continuity between scenes. The students will be able to make their own storyboards and animatic.

Sl	Course Outcome	Mapped modules
1	Remembering	M1, M2
2	Understanding the course	M1, M2, M3, M4
3	Applying the general problem	M3, M4
4	Analyse the problems	M3, M4
5	Evaluate the problems after analysing	M3,M4
6	Create using the evaluation process	M3, M4

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
M 1	**- Idea Generation , Story Writing and ScriptWriting**	10	25		

M 2	Acting for Animation & Character Performance	10	25		
M 3	Different Aspects of acting	10	25		
M 4	Creative Approach	10	25		
		40	**100**		

Paper Code: B3DAFM- 502
2D DIGITAL ANIMATION
Total Credit: 4
Total hours of lectures: 30 hours

Sl.	Topic/Module	Hour
1.	Module 1 – Introduction to Digital Animation Types of animation,the traditional process, principles of animation viz stretch and squash,timing and motion, anticipation, staging, follow through and overlapping action, straight ahead action and pose to pose action, slow in and out, arcs, exaggeration, secondary action, appeal, solid drawing	6
2.	**Module 2 – Animate concepts** The timeline, symbols, tweening, easing in and out, hinging symbols, script writing: importance of script, conflict, anatomy of screenplay, scenes, slugline, action, dialogue,create and character in flash,Bg designing,cloud animation,props animation,title animation	10
3.	Module 3 – Animation Process basic camera shots, Ball animation camera moves - zoom in/zoom out , truck in/truck out, camera transitions, the walk cycle , turn around animation , the cut, fade in/fade out, dissolve, blur, pan or zip pan Creating and importing audio into Animate , sound recording tips ,importing audio elements and managing audio files , editing audio in Flash, using outside software , preparing the timeline for Audio, lip synching, basic cartoon phonetics and vocalization, the vowels - consonant sounds - making words , Animate dialogue	10
4.	Module 3 – Rigging & Effects Animating the shadow , preparing the character for animation , dissecting the body parts into separate symbols , creating symbols , setting pivot points , rigging , creating scenes for an animated story , special effects -create fire, water, smoke from car.	10

Softwares – Adobe Photoshop
Adobe Fresco
Adobe Illustrator
Stroryboard Pro

Suggested Reading:

1. Tony White, Animation from Pencils to Pixels: Classical Techniques for the Digital Animator, Focal
2. Bill Davis, Creating 2D animation in a small studio, GGC Publishing, 2006
3. Adobe Animate in a Classrooom
4. Hedley Griffin, The Animator's Guide to 2D Computer Animation, Focal Press, 2000

Paper: 2D DIGITAL ANIMATION Lab

Code: B3DAFM 592

Course Objective: : This course will emphasise on idea generation and leading it to story development and script writing for making films.one will learn how to develop strong characters and tell stories for animation: parallel processes that result in a great film. It will also focus on learning how to create a visual sense of depth in your digital painting, as well as how to create a visual sense of story. The students will be able to make their own storyboards and animatic.

Sl	Course Outcome	Mapped modules
1	Remembering	M1, M2
2	Understanding the course	M1, M2, M3, M4
3	Applying the general problem	M3, M4
4	Analyse the problems	M3, M4
5	Evaluate the problems after analysing	M3,M4
6	Create using the evaluation process	M3, M4

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
M 1	Aspects of acting and direction	3	25		

M 2	Acting for Animation & Character Performance	3	25		
M 3	Different Aspects of acting	4	25		
M 4	Creative Approach	10	25		
		20	**100**		

Paper Code: B3DAFM- 592
2D DIGITAL ANIMATION Lab
Total Credit: 2
Total hours of lectures: 40 hours

Sl.	Topic/Module	Hour
1.	Character tracing Colouring the traced characters	8
2.	Light & shades to an object/character. Solar System With Guide Layer.	8
3.	Image or Text Masking. Animating a text- Bouncing. Ball - Rolling Coin.	12
4.	Walk cycle -Story making. Special Effects Dialogue Animation	12

Suggested Reading:

1. The Art of Layout and Storyboarding (Author: Mark Byrne)
2. Shot by shot (Author : Steven D Katz)
3. Animation Script to Screen (Author: Shamus Culhane

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Paper: STOP MOTION ANIMATION (EXPERIMENTAL)

Code: B3DAFM 503

Course Objective: This course will emphasise on idea generation and leading it to story development and script writing for making films.one will learn how to develop strong characters and tell stories for animation: parallel processes that result in a great film. It will also focus on learning how to create a visual sense of depth in your digital painting, as well as how to create a visual sense of story. They illustrate the script, plan shots, demonstrate action, and maintain continuity between scenes. The students will be able to make their own storyboards and animatic.

Sl	Course Outcome	Mapped modules
1	Remembering	M1, M2
2	Understanding the course	M1, M2, M3, M4
3	Applying the general problem	M3, M4
4	Analyse the problems	M3, M4
5	Evaluate the problems after analysing	M3,M4
6	Create using the evaluation process	M3, M4

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
M 1	**Stop Motion as an experimental medium**	10	25		
M 2	**Designing Character, Set and Props,** e	10	25		
M 3	**Animation & Frame Capturing**	10	25		
M 4	**Animation & Frame Capturing**	10	25		
		40	**100**		

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Paper Code: B3DAFM- 503

STOP MOTION ANIMATION (EXPERIMENTAL)

Total Credit: 4

Total hours of lectures:30 hours

Sl.	Topic/Module	Hour
1.	**Module 1 - Stop Motion as an experimental medium** Types of Stop Motion, Basic Requirements for Stop Motion, choosing a story for stop motion	4
2.	**Module 2 – Designing Character, Set and Props,** • Sketch of character(model pack) • Stages of making a clay model • Understanding the process to create a miniature set	10
3.	**Module 3 – Animation & Frame Capturing** • Setting up the camera • Layout & composition of Characters props and environment • Do's & Don'ts • Animating the clay model • Capturing the frames	8
4.	**Module 4 – Effects, Compositing & Final Editing** • Exploring various software like Photoshop, Monkey Jam, After Effects , Adobe Premier • Creating audio library • Understanding and creating effects for better output • Compositing & Editing as per the required scene mood	8

Softwares – Adobe Photoshop
Adobe Fresco
Adobe Illustrator
Stroryboard Pro
Monkey Jam

Suggested Readings:-

1. The Advanced Art of Stop Motion By Ken A. Priebe
2. The Kultz Book of Animation: How To Make Your Own Stop Motion Movies By Nicholas
3. Berger and John Cassiday
4. The Animator Inside Of You How To Make Stop Motion and Clay Animation Basic Tricks

5. and Tips By Chris Capps
5. Richard Taylor, "Encyclopedia of Animation Techniques", New Burlington Books, 2002.
6. Tom Gasek, "Frame by Frame Stop Motion: Non Traditional Approaches to Stop Motion
6. Animation", Taylor & Francis, 2013.
7. Tony White, "Animation from Pencils to Pixels: Classical Techniques for Digital Animators",
8. Taylor & Francis, 2006.
9. Stop Motion: Craft skills for model animation By Susannah Shaw

Paper: STOP MOTION ANIMATION (EXPERIMENTAL) Lab

Code: B3DAFM 593

Course Objective: : This course will emphasise on idea generation and leading it to story development and script writing for making films.one will learn how to develop strong characters and tell stories for animation: parallel processes that result in a great film. It will also focus on learning how to create a visual sense of depth in your digital painting, as well as how to create a visual sense of story. The students will be able to make their own storyboards and animatic.

Sl	Course Outcome	Mapped modules
1	Remembering	M1, M2
2	Understanding the course	M1, M2, M3, M4
3	Applying the general problem	M3, M4
4	Analyse the problems	M3, M4
5	Evaluate the problems after analysing	M3,M4
6	Create using the evaluation process	M3, M4

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
M 1	Aspects of acting and direction	3	25		
M 2	Acting for Animation & Character Performance	3	25		
M 3	Different Aspects of acting	4	25		
M 4	Creative Approach	10	25		

		20	**100**		

Paper Code: B3DAFM- 593

STOP MOTION ANIMATION (EXPERIMENTAL) Lab

Total Credit: 2

Total hours of lectures: 30 hours

Sl.	Topic/Module	Hour
1.	**Module 1 - Stop Motion as an experimental medium** • Watching ref video of stop motion animation	4
2.	**Module 2 – Designing Character, Set and Props** • Creating character & Props (Water colors , Poster colors , Oil Pastel colors, Acrylic colors, Pencil colors, Charcoal, Pen and Ink, Using waste material such as sand , stones, grass, hardboard, different types of color papers & clay etc. For creating experimental animation film.	8
3.	**Module 3 – Animation & Frame Capturing** • Animating basic movement of characters and capturing with camera • Timing allotment(Animating in One's and Two's) • Cycle (walk , run) • Animating secondary Action	10
4.	**Module 4 – Effects, Compositing & Final Editing** • Creating Effects such as smoke, fire , rain etc. • Compositing the frames by adding external resources • Audio Input & Final Edit	8

Suggested Readings:-

1. The Advanced Art of Stop Motion By Ken A. Priebe
2. The Kultz Book of Animation: How To Make Your Own Stop Motion Movies By Nicholas Berger and John Cassiday
3. The Animator Inside Of You How To Make Stop Motion and Clay Animation Basic Tricks and Tips By Chris Capps
4. Richard Taylor, "Encyclopedia of Animation Techniques", New Burlington Books, 2002.
5. Tom Gasek, "Frame by Frame Stop Motion: Non Traditional Approaches to Stop Motion
6. Animation", Taylor & Francis, 2013.
7. Tony White, "Animation from Pencils to Pixels: Classical Techniques for Digital Animators", Taylor & Francis, 2006.
8. Stop Motion: Craft skills for model animation By Susannah Shaw

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Paper: DIGITAL PHOTOGRAPHY

Code: B3DAFM 504

Course Objective: This course will emphasise on the history and technical evolution of Professional cameras, the component of cameras and functionalities, the rules of composition for photography, functionalities of cameras and setting up accessories. The students would be applying the techniques of lighting and application of tripods and other camera accessories to capture a good composition in cinematography & Photography.

Sl	Course Outcome	Mapped modules
1	Remembering	M1, M2
2	Understanding the course	M1, M2, M3, M4
3	Applying the general problem	M3, M4
4	Analyse the problems	M3, M4
5	Evaluate the problems after analysing	M3,M4
6	Create using the evaluation process	M3, M4

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
M 1	**Introduction to Photography**	3	25		
M 2	**Cameras and Accessories**	3	25		
M 3	**Framing and Composition**	4	25		
M 4	**Basics of Photography and Lighting**	10	25		
		20	**100**		

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Digital Photography

Total Credit: 6

Total hours of lectures: 60 hours

Sl.	Topic/Module	Hour
1.	**Module 1 - Introduction to Photography** History of camera , camera obscura, parts of camera, analog and digital cameras, pixel, raster and vector, resolution, functions of camera, viewfinder. SLR, DSLR cameras, Focus, aperture, white balance, Depth of Field, shutter speed, ISO, exposure, F-Stops.	8
2.	**Module 2 – Cameras and Accessories** Types of Cameras : point Shoot , High end consumer cameras, Lenses, Type of lenses(prime, zoom ,micro),Digital Single Lens, Reflex Cameras (Digital SLRs) Focal length, camera settings, setting white balance, sunny 16 rule, metering , Tripod- qualities , Types , Functions , speed light, reflectors. Camera equipment, types of photography (wedding, wild, portrait, street, architecture, product	10
3.	**Module 3 – Framing and Composition** Simple Rules for framing Human Subjects, Headroom , Subjective vs Objective Shooting angles, Look Room, Rule of thirds, Camera Angles, Camera moves, types of shots(extreme long shot, long shot, medium shot ,medium close up shot, close up shot) and angles (low angle, high angle, tilt POV, Birds eye view).180 degree rule Framing composition with two people, The profile two –shoot, high angle, over the shoulders , wrapping up composition.	12
4.	**Module 4 – Basics of Photography and Lighting** Aperture, F-Stop, Depth of Field, factors determining the depth of field, depth of focus, lens and focal length, focal plane, angle of coverage and characteristics of lenses, the setting of aperture and shutter and how they are relatively and arithmetically arranged, types of shutter, types of photography General Lighting concepts, Foot candles, Kelvin, Fundamentals of Lighting, natural and artificial light source, basi portrait lighting, three point lighting.	10

Suggested Readings:-

1. The Elements of Photography, Belt, Angela Faris,Focal
2. ASMP Professional Business Practices in Photography, Carr, Susan, Allworth Press
3. Photoshop CS6 in Simple Steps, Kogent Learning Solutions Inc., Dreamtech Press
4. Basic Photography: Post Production Black & White, Macleod, Steve, AVA Book

Online References:

https://www.studiobinder.com/blog/cinematography-techniques-no-film-school/

1. http://vision.cse.psu.edu/courses/CompPhoto/PhotoIntro.pdf

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Paper: WRITING AND PRESENTATION SKILLS

Code: B3DAFM 505

Course Objective: The course is designed To make the students aware of the fundamental concepts of critical reasoning and to enable them to read and respond critically, drawing conclusions, generalizing, differentiating Fact from opinion and creating their own arguments. To assist the students in developing Appropriate and impressive writing styles for various contexts.

Sl	Course Outcome	Mapped modules
1	Remembering	M1, M2
2	Understanding the course	M1, M2, M3, M4
3	Applying the general problem	M3, M4
4	Analyse the problems	M3, M4
5	Evaluate the problems after analysing	M3,M4
6	Create using the evaluation process	M3, M4

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
M 1	**Writing with Impact**	10	25		
M 2	**Writing short ,Clear and right**	10	25		
M 3	**Public Speaking Foundations**	10	25		
M 4	**Designing Presentation**	10	25		
		40	**100**		

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Paper Code: B3DAFM- 505

Writing and Presentation Skills

Total Credit: 6

Total hours of lectures: 60 hours

Sl.	Topic/Module	Hour
1.	**Module 1 - Writing with Impact** • Fundamental concepts of Critical reasoning. • Appropriate and impressive writing styles for various concepts • Writing with impact through example • Learning about the readers • Understanding how people read • Directing the eye with page elements • Grabbing readers attention	15
2.	**Module 2 - Writing short ,Clear and right** • Getting to the point • Shortening sentences • Managing paragraph lengths • Bringing out your voice • Sticking to one idea at a time • Untangling grammar • Exploiting the power of verbs • Using sentence for rhythm effect • Matching style to genre	15
3.	**Module 3 – Public Speaking Foundations** • Preparing a speech -Identifying your audience - Know why you are talking – Outlining the speech – Finding story – Research – Managing pre-performance anxiety • Opening and Delivering Speech –Develop credibility – Explore the strong openings – Introducing the agenda – develop vocal variety – practice great body language – use props and visual aids – anticipate tech mishaps -	15
4.	**Module 4 – Designing Presentation** Soft skills for academic presentations - Effective communication skills –Structuring the presentation - Choosing appropriate medium – Flip charts – OHP – Power Point presentation – Clarity and brevity - Inter-action and persuasion - Interview skills – Group Discussions.	15

Suggested Software – Microsoft Word

Power Point

Suggested Readings -

1. Write Tight: Say Exactly What You Mean with Precision and Power by William Brohaugh
2. Everybody Writes: Your Go-To Guide to Creating Ridiculously Good Content by Ann Handley

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SEMESTER - 6

Paper: ACTING FOR ANIMATORS

Code: B3DAFM 601

Course Objective: The course is designed to provide an introduction to the fundamental aspects of design, drawing methodologies as well as visual communication. Students will be able to develop a sense of design aesthetics as well as create better processes of design systems. They can understand the form by learning basic shapes, composition and light, perspective figure drawing.

Sl	Course Outcome	Mapped modules
1	Remembering	M1, M2
2	Understanding the course	M1, M2, M3, M4
3	Applying the general problem	M3, M4
4	Analyse the problems	M3, M4
5	Evaluate the problems after analysing	M3,M4
6	Create using the evaluation process	M3, M4

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
M 1	Aspects of acting and direction	10	25		
M 2	Acting for Animation & Character Performance	10	25		
M 3	Different Aspects of acting	10	25		
M 4	Creative Approach	10	25		
		40	**100**		

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Syllabus of B. Sc. (3D Animation Film Making) CBCS Structure
Effective from academic session 20-21

Paper Code: B3DAFM- 601

ACTING FOR ANIMATORS

Total Credit: 4

Total hours of lectures: 30 hours

Sl.	Topic/Module	Hour
1.	**Module 1 - Aspects of acting and direction** • Aspects of Acting and Direction, becoming an Actor, becoming a Story teller, becoming a creative practitioner over the process of animation. • Introduction to acting, History of action, how acting relates to animators, acting techniques, history and development of mime and pantomimes, history and development of dramas, Commedia dell' Arte- acting commedia, the characters, relating commedia characters to animation. • Anatomy of an Animation Director, Directing the Story, the art of Professional Story-telling, Responsibilities of a story artist. • Creative handling of the content, Implementing or feeding the concept onto the character over a brief characterization, Directing the voice actors, Detailing of the facial expressions and emotions.	10
2.	**Module 2 - Acting for Animation & Character Performance** • Learning Elements of a well animated performance. • Learn about vocal performance, flowing emotional channels through vocal acting. • Performance of the animation, learning the shot process, act around the shot learn about the characteristics of the shot, act within the poses. • Create a believable performance by layering animation techniques, learn character timing to transition through emotions.	10
3.	**Module 3 - Different Aspects of acting** • Learn and understanding of believable acting, retain a consistent attitude to your character's reactions. • Understanding dynamic facial posing: Use the line of action to create great expressions. • Engaging the body: Use your character's whole body in their performance, learn how to Exaggeration to Push your poses. • **Understanding the script, get int to the characters, learn about the** Subtext: Animate a character's thoughts rather than their words. •	10
4.	**Module 4 – Creative Approach**	10

	• Understanding the Characterization, Emotional Memory, Stage appearance and Screen Presence. • Experimental Acting by combining Human & other Creatures behavior • Acting of different human age groups • The variety of acting methodologies involves Mime Acting, Method Acting, The Chekhov Technique, Meisner Technique, Practical Aesthetics, Neurostethic Acting, Shake Acting and Voice Characterization. • Seven essential acting concepts, the audience – suspending disbelief and animation, stage actors versus animators, theatrical reality versus regular reality. The Character – personality animation, character analysis, primal analysis. The Scene – negotiation, rehearsal, emotion and empathy. • Movement, power centers, gesture, space, effort, facial Expression, Speech, active listening, the camera, actors leading camera. Techniques for acting- simplifications, avoid ambivalence, reality and scene partner, Reference, Character Rhythm, symbolism and foreshadowing, use of mirrors. The Form- comedy, farce, caricature.	

Suggested Reading:

1. Acting for Animators: 4th Edition – Ed Hooks
2. Acting for the Camera: Tony Barr

Paper: ACTING FOR ANIMATORS Lab

Code: B3DAFM 691

Course Objective: Rigging is a crucial step in character development and animation. This course introduces the rules of rigging—good geometry, organization, and controls—and shows how to create joints, constraints, and connections. This course then dives into a real-world project, taking a model and building out the skeleton and the leg, foot, body, and hand controls required for effective animation. It also devotes a chapter to FK/IK switching for finer control over arm movement. Finally, learn how to attach a character mesh to your skeleton with the skinning tools in Maya—and take your skills up a notch with a time-saving mirroring technique.

Sl	Course Outcome	Mapped modules
1	Remembering	M1, M2
2	Understanding the course	M1, M2, M3, M4
3	Applying the general problem	M3, M4
4	Analyse the problems	M3, M4

5	Evaluate the problems after analysing	M3,M4
6	Create using the evaluation process	M3, M4

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
M 1	Aspects of acting and direction	3	25		
M 2	Acting for Animation & Character Performance	3	25		
M 3	Different Aspects of acting	4	25		
M 4	Creative Approach	10	25		
		20	**100**		

Paper Code: B3DAFM- 691
ACTING FOR ANIMATORS Lab
Total Credit: 2
Total hours of lectures: 40 hours

Sl.	Topic/Module	Hour
1.	**Module 1 - Aspects of acting and direction** • Create an individual short story to direct. • Create script add layers to the script, add proper dialogues for actors. • Create proper staging for actors to crate believable act. • Setup proper camera angel and create proper shot divisions for the act.	8
2.	**Module 2 - Acting for Animation & Character Performance** • Warm up exercises for acting. • Act in different types of poses, to portray clear and defined feelings (happy, sad, etc.) • Create opportunities to show thinking process, which leads to decision and action. • Create different types of facials for different types of acting ethics.	10

3.	Module 3 - Different Aspects of acting • Create and retain a consistent attitude to your character's reactions. A shy character (small, timid movements). • Discovering the dramatist's concept of the character: The motivating force, Analyzing the role. • Vocal and physical acting, Body rhythm, breathing patterns, Pronunciation, Voice Production, use Pitches, Dramatic use of every limb in expressing ideas. • Dramatic reading of poetry, prose and dramatic scene, Improvisation, enactment of situations and scene on stage as well in front of camera. • Organizing with Control Group ,Curve Control Creations , Body Control Curve Creation , Bridging Curve Control to Joints ,parent constraint , Bridging Trunk and Tail Creation , • Skinning, smooth binding a skeleton, Painting skin weights -, mirroring smooth skin weights	10
4.	Module 4 – Creative Approach • Discovering the physical action – Committing to action – believing the action sustaining the belief making and score of the physical action. • Acting shot of animal, bird etc. • Acting Assignment on happy, sad, angry for different age groups. • Getting into the part, getting into the Character, getting into the Play, Speaking the lives, Directing attention concentration on action. • Interpreting the play – The Dual personality of the Actor, Interpreting the lines, Finding the under meaning of the lines, Finding the verbal action, Relating the lines to the motivating desire, Relating the lines to the dramatist meaning, Believing the characters manner of speaking, Motivating the longer speech. • The students must Club themselves into a group of 4-5 and differentiate themselves with a story part as per characterizations for an animation concept and act themselves accordingly as to create an acting reference video which also acts as the directorial guide to the animation concept they developed.	12

Suggested Reading:

1. Acting for Animators: 4th Edition – Ed Hooks
2. Acting for the Camera: Tony Barr

Maulana Abul Kalam Azad University of Technology, West Bengal
Syllabus of B. Sc. (3D Animation Film Making) CBCS Structure
Effective from academic session 20-21

Paper: ADVANCE CHARACTER ANIMATION

Code: B3DAFM 602

Course Objective: The course is designed to provide an introduction to the fundamental aspects of design, drawing methodologies as well as visual communication. Students will be able to develop a sense of design aesthetics as well as create better processes of design systems. They can understand the form by learning basic shapes, composition and light, perspective figure drawing.

Sl	Course Outcome	Mapped modules
1	Remembering	M1, M2
2	Understanding the course	M1, M2, M3, M4
3	Applying the general problem	M3, M4
4	Analyse the problems	M3, M4
5	Evaluate the problems after analysing	M3,M4
6	Create using the evaluation process	M3, M4

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
M 1	Understanding Storyboard, animatics to create dynamic camera view	2	25		
M 2	Advance character Animation	6	25		
M 3	Different Techniques of Biped Animation & Facial and lip sync animation	6	25		
M 4	Understanding Different Animation tools and quadruped animation	6	25		
		20	100		

Maulana Abul Kalam Azad University of Technology, West Bengal
Syllabus of B. Sc. (3D Animation Film Making) CBCS Structure
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ADVANCE CHARACTER ANIMATION

Total Credit: 4

Total hours of lectures: 20 hours

Sl.	Topic/Module	Hour
1.	**Module 1 - Understanding Storyboard, animatics to create dynamic camera view** • Understanding storyboard & animatics 2D&3D • Understand the different screen aspect ratio formats, use floor plans to show set location Plan for an animation production using charts, Visual Direction, Background Design. • Types of Framing Shot, Camera Position, Camera View, Camera Motion. • Use camera position and angles to create dynamic scenes, use camera view to create scenes. • Camera angles, Movements of the camera- Pans, Tilts Truck in and Truck outs, Shots and Scenes, Dramatic effects, Visual language and readability, Visual continuity.	2
2.	**Module 2 - Advance character Animation** • Revision of Animation Principles • Advanced Character Animation with Two Leg Animation, creating walk & run cycle (with attitude) • Advanced Body Mechanism Animation, simple jump, long jump, weight push etc. • Reflecting on human movement, gaining an insight into creating believable action, sit to stand up, creating moving hold & breathing, various dynamics action shots with proper body mechanism. • Advance Understandings of Keyframes & Graph editor, Using the Graph Editor Changing the timing of an attribute, Fine tuning an animation Deleting extra keyframes and static channels, Setting the playback range Setting keyframes. • Using Play blast to playback an animation, Using Set Driven Key to link attributes, viewing the results in the Graph Editor.	6
3.	**Module 3 – Different Techniques of Biped Animation & Facial and lip sync animation** • Advance Mechanics of biped walks, runs, head turns, gestures, Single Character Animation with Dialogues. • Animating the character with facial expressions. • Understanding of stress pads of dialog orientation (LIP Sync), the	6

	facial expression poses according to the dialogue (LIP Sync), and dialog orientation. • Learn how two or more human character interact with each other using gestures and dialogues with all emotions.	
4.	**Module 4 – Understanding Different Animation tools and quadruped animation** • Understanding Different body mechanism of quadruped animals. • Animating Four Leg Animation (walk, run, Jump) • Understanding Backend tools to add more realism to animation. (cushion,X-sheet,settle,Hook-up etc.) • Understanding proper play blast size, Character setup and Non-linear animation using trax editor. • Understanding Advance Animations tools. (Re- direct, Anim export & import etc.)	6

Software – Autodesk Maya

Suggested Reading:

1. The Art of 3D: Computer Animation and Effects - by Isaac Kerlow
2. 3D Animation Essentials - by Andy Beane, John Wiley
3. Advanced Animation - by Preston Blair

Paper: ADVANCE CHARACTER ANIMATION Lab

Code: B3DAFM 692

Course Objective: Rigging is a crucial step in character development and animation. This course introduces the rules of rigging—good geometry, organization, and controls—and shows how to create joints, constraints, and connections. This course then dives into a real-world project, taking a model and building out the skeleton and the leg, foot, body, and hand controls required for effective animation. It also devotes a chapter to FK/IK switching for finer control over arm movement. Finally, learn how to attach a character mesh to your skeleton with the skinning tools in Maya—and take your skills up a notch with a time-saving mirroring technique.

Sl	Course Outcome	Mapped modules
1	Remembering	M1, M2
2	Understanding the course	M1, M2, M3, M4
3	Applying the general problem	M3, M4
4	Analyse the problems	M3, M4

5	Evaluate the problems after analysing	M3,M4
6	Create using the evaluation process	M3, M4

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
M 1	Understanding Storyboard, animatic to create dynamic camera view	6	15		
M 2	Advance character Animation	22	30		
M 3	Different Techniques of Biped Animation & Facial and lip sync animation	22	30		
M 4	Understanding Different Animation tools and quadruped animation	20	25		
		70	**100**		

ADVANCE CHARACTER ANIMATION Lab

Total Credit: 2

Total hours of lectures: 40 hours

Sl.	Topic/Module	Hour
1.	**Module 1 - Understanding Storyboard, animatics to create dynamic camera view** • Creating Single and Multiple Cameras • Creating believable 3D Camera Movement with key frames • Setting up camera with different camera settings, using focal Lenth with different resolution and ratio. • Creating different camera shots using all types of camera angles with proper cut scenes and hook ups.	4
2.	**Module 2 - Advance character Animation** • Making different types of walk and run cycle with rigged Human	12

	Character with Primary and secondary actions. (Normal, sad, proud etc.) • Creating different types of body mechanism assignments like Simple jump, Long Jump, Weight push, weightlift, and ball throw with rigged human character with primary and secondary actions. • Creating advance movement like moving hold, breathing, sit to stand with rigged human character with primary and secondary actions. • Cleanup animations with proper graph editor control, clean up extra keys from animation, creating proper playblast.	
3.	**Module 3 – Different Techniques of Biped Animation & Facial and lip sync animation** • Creating different types of facial expressions (happy, sad, angry etc.) with rigged human characters. • Creating actions with different emotion and body gestures with rigged characters. • Importing voice clip and Creating Lip sync with facial expressions and voice dialogue with rigged human Characters. • Creating interactive emotions and body expressions, maintaining all principles of animation. • Synchronizing the lip sync or dialog with audio, creating proper dialog gesture and expression with action. • Working with the two characters, where to show both the characters are interacting to each other with rigged human characters.	12
4.	**<u>Module 4 – Understanding Different Animation tools and quadruped animation</u>** • Create four-legged character animation with any four legged animals (walk,run & jump). • Transfer animation using Animation import and export tools, changing playblast size ratio as per shot requirements. • Create crowd animation, Importing and transferring animation to similar duplicated character showing as crowd. • Change character movement using redirect tool.	12

Software – Autodesk Maya

Suggested Reading:

1. The Art of 3D: Computer Animation and Effects - by Isaac Kerlow
2. 3D Animation Essentials - by Andy Beane, John Wiley
3. Advanced Animation - by Preston Blair
4. Acting for Animators: 4th Edition – Ed Hooks