VIT SCHOOL OF DESIGN

B. Sc. (Multimedia and Animation)

(B.Sc. -MMA)

Curriculum

(2019-2020 admitted students)

VISION STATEMENT OF VELLORE INSTITUTE OF TECHNOLOGY

Transforming life through excellence in education and research.

MISSION STATEMENT OF VELLORE INSTITUTE OF TECHNOLOGY

World class Education: Excellence in education, grounded in ethics and critical thinking, for improvement of life.

Cutting edge Research: An innovation ecosystem to extend knowledge and solve critical problems.

Impactful People: Happy, accountable, caring and effective workforce and students.

Rewarding Co-creations: Active collaboration with national & international industries & universities for productivity and economic development.

Service to Society: Service to the region and world through knowledge and compassion.

B. Sc. (Multimedia and Animation)

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

1. Graduates will function in their profession with social awareness and responsibility.

2. Graduates will interact with their peers in other disciplines in their work place and society and contribute to the economic growth of the country.

3. Graduates will be successful in pursuing higher studies in their chosen field.

B. Sc. (Multimedia and Animation)

PROGRAMME OUTCOMES (POs)

PO_02: Having a clear understanding of the subject related concepts and of contemporary issues and apply them to identify, formulate and analyse complex engineering problems.

PO_06: Having problem solving ability- to assess social issues (societal, health, safety, legal and cultural) and engineering problems

PO_07: Having adaptive thinking and adaptability in relation to environmental context and sustainable development

PO_08: Having a clear understanding of professional and ethical responsibility

PO_09: Having cross cultural competency exhibited by working as a member or in teams

PO_10: Having a good working knowledge of communicating in English – communication with engineering community and society

PO_12: Having interest and recognise the need for independent and lifelong learning

B. Sc. (Multimedia and Animation)

ADDITIONAL PROGRAMME OUTCOMES (APOs)

APO_01: Having an ability to be socially intelligent with good SIQ (Social Intelligence Quotient) and EQ (Emotional Quotient)

APO_05: Having Virtual Collaborating ability

APO_06: Having an ability to use the social media effectively for productive use

APO_07: Having critical thinking and innovative skills

APO_08: Having a good digital footprint

B. Sc. (Multimedia and Animation)

PROGRAMME SPECIFIC OUTCOMES (PSOs)

On completion of B. Sc. (Multimedia and Animation) programme, graduates will be able to
•   PSO1: To explore the fundamentals and underlying theories of Multimedia and animation to design and develop 2D/3D animations, film-making, visual effects for the creative media.
•   PSO2: To innovate best practices for elements of design, virtual reality and gaming.

B. Sc. (Multimedia and Animation)

CREDIT STRUCTURE

Category-wise Credit distribution

Category	Credits
University core (UC)	33
Programme core (PC)	57
Programme elective (PE)	36
University elective (UE)	06
Bridge course (BC)	--
Total credits	132

B. Sc. (Multimedia and Animation)

DETAILED CURRICULUM

UNIVERSITY CORE (UC) – 33 credits

S.NO	COURSE CODE	COURSE TITLE	L	T	P	J	C
	ENG1001	Basic English	0	0	4	0	2
2	ENG1012	Communicative English	0	0	4	0	2
3	HUM1032	Ethics and Values	2	0	0	0	2
4	MAT1012	Statistical Applications	2	0	2	0	3
5	MMA1007	Role of Media in Environmental Studies	3	0	0	0	3
6	MMA3098	Comprehensive Exam	0	0	0	0	2
7	MMA3099	Capstone Project	0	0	0	0	12
8	EXC4097	Co-Extra Curricular Basket	0	0	0	0	2
9	STS1011	SOFT SKILLS	3	0	0	0	1
10	STS1012	SOFT SKILLS	3	0	0	0	1
11	STS2011	SOFT SKILLS	3	0	0	0	1
12	STS2012	SOFT SKILLS	3	0	0	0	1
13	STS3003	SOFT SKILLS	3	0	0	0	1

PROGRAMME CORE (PC) – 57 Credits

S.NO	COURSE CODE	COURSE TITLE	L	T	P	J	C
1	MMA1001	Multimedia Systems	3	0	0	0	3
2	MMA1002	Media Ethics	2	0	0	0	2
3	MMA1003	Design Fundamentals	0	0	6	0	3
4	MMA1004	Fundamentals of Art	0	0	8	0	4
5	MMA1005	Programming Fundamentals	3	0	2	0	4
6	MMA1006	Graphic Design Techniques	0	0	8	4	5
7	MMA2001	Art for Animation	0	0	6	4	4
8	MMA2002	Interactive Animation Techniques	0	0	8	4	5
9	MMA2003	Web Design Techniques	0	0	6	4	4
10	MMA2004	Basic Photography	0	0	8	4	5
11	MMA2005	Lighting & Rendering	0	0	6	4	4
12	MMA3001	Modeling and Texturing	0	0	8	4	5
13	MMA3002	3D Animation	0	0	8	0	4
14	MMA3003	Visual Effects	0	0	8	4	5

PROGRAMME ELECTIVE (PE) - 36 Credits

S.NO	COURSE CODE	COURSE TITLE	L	T	P	J	C
1	MMA1008	Multimedia Databases	2	0	0	0	2
2	MMA2006	User Interface	0	0	8	4	5
3	MMA2007	Game Development	0	0	8	4	5
4	MMA2008	UX Design	3	0	0	0	3
5	MMA3004	Advanced 3D Animation	0	0	8	4	5
6	MMA3005	Scripting and Storyboarding Techniques	0	0	8	4	5
7	MMA3006	Digital Cinematography	0	0	6	4	4
8	MMA3007	Rigging	0	0	8	4	5
9	MMA3008	Advanced Modeling	0	0	8	4	5
10	MMA3009	Advanced Film Making	0	0	8	4	5
11	MMA3010	Video Editing and Digital Intermediate	0	0	8	4	5
12	MMA3011	Advanced Compositing	0	0	8	4	5
13	MMA3012	Artificial Intelligence for Games	3	0	0	0	3
14	MMA3013	Architectural Visualization	0	0	8	4	5
15	MMA2009	Virtual Reality	3	0	2	0	4

UNIVERSITY ELECTIVES (UE) – 6 Credits

S.NO	COURSE CODE	COURSE TITLE	L	T	P	J	C
1		University Elective – 1*	3	0	0	0	3
2		University Elective –2*	3	0	0	0	3

*University Elective selected from University Elective basket

Course code			L	T	P	J	C
ENG1001		**BASIC ENGLISH**	**0**	**0**	**4**	**0**	**2**
Pre-requisite	**Nil**		**Syllabus version**				
			1.2				

Course Objectives:

- To make students understand and help in right pronunciation.
- To prepare students to participate effectively in critical conversations and demonstrate the ability to communicate effectively.
- To enable students comprehend complex English texts.

Expected Course Outcome:

At the end of the course the student should be able to

1. Enhance the listening skills of the learners by exposing them to documentaries, speeches etc.,
2. Comprehend language and communication skills in academic and social contexts.
3. Strengthen the informal, formal and creative writing skills of the learners in social media.
4. Communicate clearly and precisely in formal and informal contexts
5. Describe and narrate incidents with clarity, coherence suitable for purpose and audience

Student Learning Outcomes (SLO): | **15,16**

[15] Having an ability to use the social media effectively for productive use

[16] Having a good working knowledge of communicating in English

Module:1	Listening	**4 hours**
	Active Listening, Casual Conversations	
	Activity: Medium level and answering MCQs	

Module:2	Speaking	**6 hours**
	Conversations	
	Activity: Talking about the weather, current events, at the office, at social event, out for a walk.	

Module:3	Reading	**4 hours**
	Reading Newspaper Articles	
	Activity: Answering factual comprehension questions	

Module:4	Writing	**6 hours**
	Letter Writing	
	Activity: Writing letters to the editor, leave letter, asking for general information.	

Module:5	Listening and Responding	**4 hours**

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TED Talks

Activity: Answering Critical Questions

Module:6	Speaking	6 hours

Activity: Narrating Short stories/ Anecdotes

Module:7	Reading	4 hours

Skimming and Scanning
Activity: Reading a short story and summarizing.

Module:8	Writing	4 hours

Activity: Writing Blogs on Nature/Environment/Science/Technology

Module:9	Listening	4 hours

Motivational Speeches
 Activity : Short Speeches on simple topics

Module:10	Speaking	4 hours

Narrating Incidents
 Activity: Short Speeches on unforgettable incidents/happenings

Module:11	Writing	4 hours

Sentence Patterns
 Activity: Analyzing different sentence patterns.

Module:12	Speaking	4 hours

Describing People
Activity: Short Speeches on people's features

Module:13	Writing	6 hours

Digital Writing Skills
e-mail writing, SMS writing, Posting messages on social media

	Total Practical hours:	**60 hours**	

Text Book(s)

1. Thomson , Kenneth. **English for Meetings**. OUP : 2015

Reference Books

1. Parul Popat. **Communication Skills** . Pearson Education: 2015.

2.	Professional Speaking skills, Aruna Koneru, Oup, 2015	
3.	English For Meetings, Kenneth Thomson, Oup , 2015	

Mode of Evaluation: MCQs, Presentation, Discussion, Assignments, Mini Projects

List of Challenging Experiments (Indicative)		**SLO: 15, 16**	
1.	Creating a Digital Profile – LinkedIn (Résumé/Video Profile)	10 hours
2.	Crossword Puzzles	6 hours
3.	Writing SOPs	6 hours
4.	Exploring multi-cultural perspectives	6 hours
5.	Analyzing a challenging scenario	8 hours
6	Word games	6 hours
7	Writing slogans	6 hours
8	Role play	6 hours
9	Solving riddles in English	2 hours
10	Speaking on an imaginary situation (If I were)	4 hours
	Total Practical Hours	**60 hours**

 Mode of evaluation: Presentation, Discussion, Assignments, Mini Project

Recommended by Board of Studies	22-07-2017		
Approved by Academic Council	No. 46	Date	24-8-2017

Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

Course code			L	T	P	J	C
ENG1012		**COMMUNICATIVE ENGLISH**	**0**	**0**	**4**	**0**	**2**
Pre-requisite		**Basic English**	**Syllabus version**
ENG1001			1.2

Course Objectives:

- ꞌ To help the learners attain high level proficiency in all the four language skills.
- ꞌ To make the learners familiar with different types of communication.
- ꞌ To help the learners understand the barriers to communication.

Expected Course Outcome:

At the end of the course the student should be able to

1. Familiarize learners with basic and fundamental principles of formal communication.
2. Engage the learners in academic, business, formal and informal communications activities.
3. Strengthen the informal, formal and creative writing skills of the learners.
4. Develop skills to comprehend, analyze and review creative works.
5. Enhance the listening skills of the learners by exposing them to documentaries, speeches etc.,

Student Learning Outcomes (SLO):	**16 and 18**

[16] Having a good working knowledge of communicating in English

[18] Having critical thinking and innovative skills

Module:1	Listening	**4 hours**
\multicolumn{3}{l}{Formal Conversation}
\multicolumn{3}{l}{Activity: Listening and responding to questions}
Module:2	Speaking	**6 hours**
\multicolumn{3}{l}{Formal Situations}
\multicolumn{3}{l}{Activity: Small talk}
Module:3	Writing	**4 hours**
\multicolumn{3}{l}{Paragraph Writing}
\multicolumn{3}{l}{Activity: Write a paragraph on your hobby/ interesting incident}
Module:4	Reading	**4 hours**
\multicolumn{3}{l}{Sports Articles}
\multicolumn{3}{l}{Activity: Reading for general information}
Module:5	Listening	**4 hours**
\multicolumn{3}{l}{Film Clippings/ Documentaries}
\multicolumn{3}{l}{Activity: Listening for specific information}
Module:6	Speaking	**4 hours**
\multicolumn{3}{l}{Short Discussions}
\multicolumn{3}{l}{Activity: Speak on issues}

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Module:7	Writing		**4 hours**
Letter Writing			
Activity:Enquiry Letters, Complaint Letter			
Module:8	Speaking		**6 hours**
Interview skills			
Activity: Role play interview situations			
Module:9	Writing		**4 hours**
Précis writing			
Activity: Summarize the given passage			
Module:10	Reading		**4 hours**
Science articles			
Activity: Reading for factual information			
Module:11	Listening		**4 hours**
Speeches of renowned personalities			
Activity: Listen and respond to given task			
Module:12	Writing		**4 hours**
Short stories			
Activity: Write the story using given hints			
Module:13	Speaking		**4 hours**
Extempore			
Activity: Short speeches on general topics			
Module:14	**Writing**		**4 hours**
Creative writing			
Activity: Writing an essay on general topics			
		Total Practical hours:	**60 hours**	

Text Book(s)	
1.	Scanlon, Jaimie, et al. *Q: Skills for success. Listening and Speaking*.2 Oxford University Press, 2015.
2.	Caplan, Nigel A., and Scott Roy Douglas. *Q, Skills for Success: Reading and Writing*.2 Oxford University Press, 2011.
Reference Books	
1.	Joan Maclean & Tony Lynch, Study Speaking, Kenneth Anderson, CUP, 2013
2	**John Thill, Courtland L. Bovee, Excellence In Business Communication, 2016, Edition 12, Pearson,** ISBN-13: 978-0134388175
3	Judith F Olson, Writing Skills: Success in 20 Minutes a Day, 2013, Edition 1, Goodwill Publishing House, ISBN-13: 978-8172452452
4	How to Speak and Write Correctly, Joseph Devlin, 2017, Edition 1, CreateSpace Independent Publishing Platform, **ISBN-13:** 978-1974637218

5.	Meena Agarwal, English Communication, 2016, Edition 1, ISBN-13: 978-9351676737 Publisher		

Mode of Evaluation: Quizzes, Presentation, Role play, Group Discussion, Assignments, Mini Project

List of Challenging Experiments (Indicative)		**SLO: 16,18**	
1.	Video Resume	8 hours
2.	Language learning strategies	6 hours
3.	Movie Review	4 hours
4.	Role-Play	6 hours
5.	Survey	8 hours
6.	Poster Making	6 hours
7.	Mind mapping	4 hours
8.	Transcoding	6 hours
9.	Word building activities	6 hours
10.	Report writing	6 hours
	Total Practical Hours	60 hours

Mode of evaluation: Quizzes, Presentation, Role play, Group Discussion, Assignments, Mini Project

Recommended by Board of Studies	22-07-2017		
Approved by Academic Council	No. 46	Date	24-8-2017

Course code			L	T	P	J	C
MMA1007	**ROLE OF MEDIA IN ENVIRONMENTAL STUDIES**		**3**	**0**	**0**	**0**	**3**
Pre-requisite	**NIL**			**Syllabus version**			

Course Objectives:

The course is aimed :

1. To motivate the students about the media role in environmental studies.
2. At students gaining experience in personally and collectively engaging the creative process.
3. To understand and rectify the problems faced by the environment.

Expected Course Outcome:

At the end of the course the student should be able to :

1. Implement the media knowledge on society, environment, culture, broadcasting and media.
2. Understand the knowledge of natural resources, social issues and bio-diversity.
3. Expand the knowledge about the concepts related to media
4. Be aware of social implications, media exposure and its uses in globalization among media audiences.
5. Gain knowledge on global culture and media operations

Student Learning Outcomes (SLO):	**2,3,18**

[2] Having a clear understanding of the subject related concepts and of contemporary issues

[3] Having an ability to be socially intelligent with good SIQ (Social Intelligence Quotient) and EQ (Emotional Quotient)

[18] Having critical thinking and innovative skills

Module:1	**Media and environmental studies**	**6 hours**

The multi- disciplinary nature of environmental studies - Definition, scope, importance, need for public awareness – Role of media in sensitizing the people – The need for proper investigation – significance of World Environment Day – Earth Day etc.

Module:2	**Natural Resources**	**6 hours**

Natural Resources – forest resources – use, exploitation, deforestation, construction of multipurpose dams – effect on forests, Water resources – use of surface and subsurface water; effect of floods, drought, water conflicts, food resources – food problems, advantage and disadvantage of fertilizers & pesticides, effect on environment

Module:3	**Energy Resources**	**6 hours**

Need to develop renewable energy, land resources – Land degradation, landslides, soil erosion, desertification & case studies

Module:4	**Social Issues and the environment**	**6 hours**

Urban problems related to energy & sustainable development, water conservation, rain water harvesting, watershed management, problems related to rehabilitation – case studies, Wasteland reclamation, Consumerism and waste products - Environment Protection Act, Air, Water, Wildlife, Forest Conservation Act, Environmental legislation and public awareness.

Module:5	**Media in Ecology conservation:**	

 Concept of ecosystem, structure & function of an ecosystem, ecological succession, food chains, food

webs and ecological pyramids. Problems related to energy – Water conservation – Climate change and global warming – Environment protection Act – Air (Prevention and control of pollution) Act.

Module:6	Bio diversity	6 hours

Definition, genetic, species and ecosystem diversity, bio-geographical classification of India, hotspots, threats related to habitat loss, poaching of wildlife, man-wildlife conflicts, Conservation of bio- diversity – Wildlife Protection Act.

Module:7	Media in Human population	7 hours

Population growth, variation among nations, Population explosion – Family Welfare Programme, Environment and human health, Human Rights, Value Education, HIV/ AIDS, Women and Child Welfare, Role of Information Technology – Visit to local polluted site / Case Studies. Customer Orientation – retention - QFD – CSM
– TQM Models – Case Studies.

Module:8	Guest Lecture	2 hours

Expert talk on the recent trends of media role in environmental studies.

	Total Lecture hours:	45 hours

Text Book(s)

1.	V. K. Ahluwalia " Environmental Studies: Basic Concepts", The Energy and Resources Institute (TERI), 2012.

Reference Books

1.	ErachBarucha " Text Book for Environmental Studies: Undergraduate Courses", UGC, 2005.

Mode of Evaluation: CAT / Assignment / Quiz / FAT / Project / Seminar

Recommended by Board of Studies	05-10-2017		
Approved by Academic Council	No. 47	Date	5-10-2017

Course code			L	T	P	J	C
HUM1032		**ETHICS AND VALUES**	**2**	**0**	**0**	**0**	**2**
Pre-requisite	**Nil**		**Syllabus version**

Course Objectives:

- To understand and appreciate ethical issues facing an individual, profession, society and polity.
- To understand the negative health impacts of certain unhealthy behaviors.
- To appreciate the need and importance of Physical, Emotional Health and Social Health
- Exposes to non-traditional violent and nonviolent crimes that have significant physical, fiscal, and social costs.

Expected Course Outcome:

1. Make better lifestyle choices to increase your health and wellness for life.
2. Ability to follow sound morals and ethical values scrupulously to prove as good citizens
3. Understand how a habit becomes an addiction; its effects and prevention.
4. Understand the negative health impacts of certain unhealthy behaviours.
5. Identify and portray ethical behaviours and values consistent with the health.
6. Identify ethical concerns in research and intellectual contexts, including academic integrity, use and citation of sources, the objective presentation of data, and the treatment of human subjects.
7. Identify the main typologies, characteristics, activities, actors and forms of cybercrime.

Student Learning Outcomes (SLO):	2, 9, 11

[2] Having a clear understanding of the subject related concepts and of contemporary issues
[9] Having interest in lifelong learning
[11] Having problem solving ability- solving social issues and engineering problems

Module:1	**Being good and responsible**		**5 hours**

Gandhian values such as truth and non-violence – comparative analysis on leaders of past and present – society's interests versus self-interests

Personal Social Responsibility: Helping the needy, charity and serving the society.

Module:2	**Social Issues 1**		**4 hours**

Harassment – types - Prevention of harassment, violence and terrorism

Module:3	**Social Issues 2**		**4 hours**

Corruption: ethical values, causes, impact, laws, prevention – electoral malpractices

white collar crimes - tax evasions – unfair trade practices

Module:4	**Addiction and Health**		**3 hours**

Peer pressure - Alcoholism: ethical values, causes, impact, laws, prevention – Ill effects of smoking - Prevention of Suicides

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Sexual Health: Prevention and impact of pre-marital pregnancy and Sexually Transmitted Diseases

Module:5	Drug Abuse	4 hours

Abuse of different types of legal and illegal drugs: ethical values, causes, impact, laws and prevention

Module:6	Personal and Professional Ethics	3 hours

Dishonesty - Stealing - Malpractices in Examinations – Plagiarism

Module:7	Abuse of technologies	4 hours

Hacking and other cyber crimes, addiction to mobile phone usage, video games and social networking websites

Module:8	**Invited Talk:** Contemporary Issues	3 hours

	Total Lecture hours:	**30hours**

Reference Books

1.	Dhaliwal, K.K (2016), "Gandhian Philosophy of Ethics: A Study of Relationship between his Presupposition and Precepts, Writers Choice, New Delhi, India
2.	Vittal, N (2012), "Ending Corruption? - How to Clean up India?", Penguin Publishers, UK
3.	Birch, S (2011), "Electoral Malpractice", Oxford University Press, UK
4.	Pagliaro, L.A. and Pagliaro, A.M (2012), "Handbook of Child and Adolescent Drug and Substance Abuse: Pharmacological , Developmental and Clinical Considerations", Wiley Publishers, U.S.A
5.	Pandey, P. K (2012), "Sexual Harassment and Law in India", Lambert Publishers, Germany

Mode of Evaluation: Quizzes, CAT, Digital assignments, poster/collage making and projects

Recommended by Board of Studies	26-07-2017		
Approved by Academic Council	No. 47	Date	5-10-2017

Course code			L	T	P	J	C
MMA3098		**COMPREHENSIVE EXAM**	**0**	**0**	**0**	**0**	**2**
Pre-requisite	**Nil**				**Syllabus version 1.0**		

Course Objectives:

1. To re-iterate and explore the basic concepts emphasized in core multimedia courses
2. To provide a holistic view about the core and advanced animation principles
3. To explore the application avenues for the Multimedia and Animation concepts.

Expected Course Outcomes:

1. Demonstrate knowledge of the fundamental requirement of Art and design.
2. Demonstrate basic graphics and web design techniques.
3. Explore the modelling and lighting concepts
4. Mastering the concepts of digital cinematography.
5. Understand the concept of various visual effects and compositing techniques.

Student Learning Outcomes (SLO): 2,11,12

[2]   Having a clear understanding of the subject related concepts and of contemporary issues
[11] Having interest in lifelong learning
[12] Having adaptive thinking and adaptability

Module:1	ART AND DESIGN	SLO: 2

Line of action, balance – different poses – stick figure – male & female with measurement – figure drawing basics – Essentials of human figure drawing – proportion and gesture - Perspective view – importance – terminology – horizon line / eye level – vanishing point – viewpoint – orthogonal line – ground line – picture plane – types of perspective views – aerial vs. linear – types of linear perspective – one point perspective – two point perspective – three point perspective – bird's view & warms view - Cartooning – types of cartoons – political/editorial, gag cartoons, illustrative cartoons, cartoon strips, animated cartoons – methodical development of a cartoon – head types – eyes –noses – mouths – ears – hands and feet – body types and proportions – cartoon character object – various action poses

Module:2	GRAPHIC & WEB DESIGN TECHNIQUES	SLO: 2

Basics of Photoshop - Logo – Business Card – Flyer – Poster – Illustrator – Tools & Techniques - Analysis research – concept development – design sketching – content integration – Brochure Design – Magazine Design – Package Design – Tools & Techniques - Dreamweaver - Photoshop – Single Page Website –Planning – Navigation Bar - Tools & Techniques - HTML skeleton - HTML tags for text, links, lists - HTML tags and web standards for images - Simple layouts - Complex layouts - HTML tags for layout - HTML tags for tables & styles - Internal &External CSS style sheets - Responsive website – static webpage – dynamic webpage.

Module:3	MODELING AND LIGHTING	SLO: 11

Maya Interface: introduction to user interface –working in 3D – views – cameras –the Maya workspace - saving your work – creating manipulating and m oving objects – perspective and orthographic windows – creating curves – editin g curves – attaching and detaching curves - Types of curves, types of surfaces, editing nurbs surfaces, Boo lean, stitch, isoparm displacement, trimming a nurbs surface, filleting nurbs surface , Modeling: using Nurbs curves to create a model

– creating table - Creating interior –subdivision surfaces –shoulder setup –Using extrude – creating a new layer–Using the cut faces tool – convert subdivision surfaces to polygon – using the Mesh – Smooth option – using split polygon tool – using the Mes h - Combine option – using Merge Edges option – using the subdivide proxy option – u sing the Mesh - Extract option – using Move tool – using the merge edge tool , creating interior and exterior, modeling various types of props for interior and exterior, crea ting an urban(village)

Module:4	**Digital Cinematography**	SLO: 11

Various types of Camera; Film Types; Pioneers of Photography; Pioneers of Cinematography; Various Editing techniques; Early Cinema; Film Camera Types; Film Projection; Sound for Cinema; Dolby technologies; Sound Perception & Visualization; Microphones types and Uses. - Lighting for Photography; Light Meter; Types of lights for Still Photography; Day shoot reflectors handling - using different filters avoiding the over light – day time low light handling – night low light handling different lenses – indoor setting up the light and using wide angle camera; - Camera angles – camera movement - camera blocking – different types of cameras and features (digital and analog) – different types of lenses (wide angel, tele lenses)– tripod handling – track and dolly – different types of lens and filters – matte box

Module:5	VFX & Compositing	SLO: 12

History of VFX – VFX vs. SFX- Evolution of VFX – Recent and current trends of VFX in Film Industry- Types of VFX soft wares- layer based – node based – File Formats for VFX - Applications of softwares – previewing files – opening a workspace – examine the composite – make changes to the composite – the schematic view – repositioning interface elements – creating simple composites: comparing 3D and 2D option – using operators in a composite – color correcting – use the histogram to improve the matte – adjust the colour suppression curves - Compositing tools and properties – types of compositing – 3d compositing - live action compositing – stages of compositing –FG and BG matching colour- shadows – lighting

Course Code			L	T	P	J	C
MAT-1012	**STATISTICAL APPLICATIONS**		**2**	**0**	**2**	**0**	**3**
Pre-requisite	**None**		**Syllabus Version**				
			1.0				

Course Objectives:

- This paper provides the meaning and scope of Statistical Applications.
- This enables the students to understand and use the applications of statistics in the real-time problems.
- This course seeks the comprehensive knowledge about the data collection, presentation of data, pictorial representation, and measures of central tendency, measures of dispersion, control charts, correlation, regression, time series, probability, estimation and inference.

Expected Course Outcome:

A student will be able to

- Organize, present and interpret statistical data, both numerically and graphically.
- Perform regression analysis, and compute and interpret the coefficient of correlation.
- Use various methods to compute the probabilities of events.
- Analyse and interpret data using appropriate statistical hypothesis and parametric testing techniques.
- Apply statistical quality control techniques.
- Implement SPSS code for statistical data.

Student Learning Outcomes (SLO):	1,2,7

[1] Having an ability to apply mathematics and science in engineering applications
[2] Having a clear understanding of the subject related concepts and of contemporary issues
[7] Having computational thinking (Ability to translate vast data in to abstract concepts and to understand database reasoning)

Module:1	**Introduction to Statistics and Data Collection:**	**5 hours**

Importance of statistics, concepts of statistical population and a sample - Methods of Random and Non - Random Sampling - quantitative and qualitative data - Measurement scales - nominal, ordinal, interval and ratio - Primary and secondary data- Classification and tabulation of data. Diagrammatic and graphical representation of data-Histograms and Frequency Polygons.

Module:2	**Describing Business Data:**	**5 hours**

Measures of Central tendency- Mean, median and mode- Measures of Dispersion, Range, Quartile deviation, Mean Deviation, Standard Deviation-The coefficient of Variation.

Module:3	**Correlation and Regression Analysis:**	**4 hours**

The Scatter Plot- Correlation-Types-Karl Pearson's Coefficient of Correlation-Spearman's Rank Correlation –Regression lines and coefficients- the coefficient of Determination- Residuals-the standard error of Estimate.

Module:4	Probability:		4 hours
Probability, Random experiments, trial, sample space, events. Approaches to probability - classical, empirical, subjective and axiomatic. Theorems on probabilities of events. Addition rule of probability. Conditional probability, independence of events and multiplication rule of probability. Bayes theorem and its applications.			

Module:5	Statistical Control Charts:		5 hours
Statistical Control Charts- Introduction - Types of Control Charts – Setting up a Control Procedure – X bar (Mean) Chart and R Chart–c Chart–p Chart–Advantages and Limitation of Control Charts.			

Module:6	Testing of Hypothesis:		5 hours
Testing of Hypothesis – Z- test, Student's t- test, F-test, Chi-square test.			

Module:7	Contemporary Issues		2 hours
Industry Expert Lecture			

		Total Lecture hours:	30hours	

Text Book(s)

1.	David. M. Levin, David. F. Stephen, and Cathryn. A. Szadat , (2013) , Statistics for managersusing MS-Excel , 7Th Edition, Pearson Education (India) .

Reference Books

1.	S. P. Gupta, 2014, Business Statistics and Statistical Methods, S. Chand Publication, New Delhi.
2.	L. Mayes & Keying, (2005) , Probability Statistics for Engineers and Scientists, Pearson Education.
3.	Levin Richard and Rubin David, ((2008) , 2011-reprint), Statistics For Management, 7th Edition, Pearson Education, Dorling Kindersley.
4.	Andy Field, (2013) , Discovering Statistics Using IBM SPSS Statistics, 4th Edition, Sage Publication.

Mode of Evaluation

Digital Assignments, Continuous Assessments, Final Assessment Test

List of Challenging Experiments (Indicative)

1.	Tabulation and Pictorial representations of Various data types using Excel or SPSS.	2 hours
2.	Calculation of Mean, Median, Mode, location measures, Variance and Box-Plot representations calculation using Excel or SPSS.	2 hours
3.	Plotting scatter plot, Measuring correlation	2 hours
4	Fitting of linear regression	2 hours
5	Fitting of Multiple linear regression	2 hours
6.	Plotting Mean and Range Charts, C chart, using Excel or SPSS.	2 hours
7	Plotting P chart , np chart and C chart using Excel or SPSS.	2 hours
8	Z-test for means and Proportions-One sample and Two sample tests	2 hours
9	t-test for single mean, difference of means and Proportions	2 hours
10	Test for variance and Contingency (Chi-Square -Cross Tab) Test Excel or SPSS.	2 hours

	Total Laboratory Hours	20 hours
Mode of Evaluation		
Weekly Assessments, Final Assessment Test		
Recommended by Board of Studies	25-02-2017	
Approved by Academic Council	No. 45	Date	16-03-2017

Course code			L	T	P	J	C
STS1011	**INTRODUCTION TO SOFT SKILLS**		**3**	**0**	**0**	**0**	**1**
Pre-requisite	**None**		**Syllabus version**				
							2

Course Objectives:

- To enhance the logical reasoning skills of the students and improve the problem-solving abilities
- To strengthen the ability to solve quantitative aptitude problems
- To enrich the verbal ability of the students
- To help the students understand the importance of ethics and values

Expected Course Outcome:

1. Students will be able to solve problems of Quantitative Aptitude
2. Students will be introduced to Logical Reasoning questions
3. Students will learn the strategies to solve Verbal Ability questions
4. Understand the importance of ethics and values

Student Learning Outcomes (SLO):	3, 8, 12, 13

[3] Having an ability to be socially intelligent with good SIQ (Social Intelligence Quotient) and EQ (Emotional Quotient)

[8] Having Virtual Collaborating ability

[12] Having adaptive thinking and adaptability

[13] Having cross cultural competency exhibited by working in teams

Module:1	Lessons on excellence		10hours

Ethics and integrity
Importance of ethics in life, Intuitionism vs Consequentialism, Non-consequentialism, Virtue ethics vs situation ethics, Integrity - listen to conscience, Stand up for what is right

Change management
Who moved my cheese?, Tolerance of change and uncertainty, Joining the bandwagon, Adapting change for growth - overcoming inhibition

How to pick up skills faster?
Knowledge vs skill, Skill introspection, Skill acquisition, "10,000 hours rule" and the converse

Habit formation
Know your habits, How habits work? - The scientific approach, How habits work? - The psychological approach, Habits and professional success, "The Habit Loop", Domino effect, Unlearning a bad habit

Analytic and research skills.
Focused and targeted information seeking, How to make Google work for you, Data assimilation

Module:2	Team skills		11 hours

Goal setting
SMART goals, Action plans, Obstacles -Failure management

Motivation
Rewards and other motivational factors, Maslow's hierarchy of needs, Internal and external motivation

Facilitation
Planning and sequencing, Challenge by choice, Full Value Contract (FVC), Experiential learning

cycle, Facilitating the Debrief
Introspection
Identify your USP, Recognize your strengths and weakness, Nurture strengths, Fixing weakness, Overcoming your complex, Confidence building
Trust and collaboration
Virtual Team building, Flexibility, Delegating, Shouldering responsibilities

Module:3	Emotional Intelligence	12 hours

Transactional Analysis
Introduction**,** Contracting, Ego states**,** Life positions
Brain storming
Individual Brainstorming, Group Brainstorming, Stepladder Technique, Brain writing, Crawford's Slip writing approach, Reverse brainstorming, Star bursting, Charlette procedure, Round robin brainstorming
Psychometric Analysis
Skill Test, Personality Test
Rebus Puzzles/Problem Solving
More than one answer, Unique ways

Module:4	Adaptability	12hours

Theatrix
Motion Picture, Drama, Role Play, Different kinds of expressions
Creative expression
Writing, Graphic Arts, Music, Art and Dance
Flexibility of thought
The 5'P' framework (Profiling, prioritizing, problem analysis, problem solving, planning)
Adapt to changes(tolerance of change and uncertainty)
Adaptability Curve , Survivor syndrome

		Total Lecture hours:	45 hours	

Text Book(s)

1.	Chip Heath, How to Change Things When Change Is Hard (Hardcover),2010,First Edition,Crown Business.
2.	Karen Kindrachuk**,** Introspection**,** 2010, 1st Edition.
3.	Karen Hough, The Improvisation Edge: Secrets to Building Trust and Radical Collaboration at Work, 2011, Berrett-Koehler Publishers

Reference Books

1.	Gideon Mellenbergh, A Conceptual Introduction to Psychometrics: Development, Analysis and Application of Psychological and Educational Tests,2011, Boom Eleven International.
2.	Phil Lapworth, An Introduction to Transactional Analysis, 2011, Sage Publications (CA)

Mode of Evaluation: FAT, Assignments, Projects, Case studies, Role plays,3 Assessments with Term End FAT (Computer Based Test)

Recommended by Board of Studies	09/06/2017		
Approved by Academic Council	No 45	Date	15/06/2017

Course code			**L**	**T**	**P**	**J**	**C**
STS2011	**REASONING SKILL ENHANCEMENT**		**3**	**0**	**0**	**0**	**1**
Pre-requisite	**None**		**Syllabus version**				
					2		

Course Objectives:

- To enhance the logical reasoning skills of the students and improve the problem-solving abilities
- To strengthen the ability to solve quantitative aptitude problems
- To enrich the verbal ability of the students
- To help the students understand the importance of emotional intelligence

Expected Course Outcome:

1. Demonstrate critical thinking skills, such as problem solving related to their subject matters.
2. Demonstrate competency in verbal, quantitative and reasoning aptitude.
3. Perform good written communication skills.

Student Learning Outcomes (SLO):	**5, 9, 10, 16**

[5] Having design thinking capability

[9] Having problem solving ability- solving social issues and engineering problems

[10] Having a clear understanding of professional and ethical responsibility

[16] Having a good working knowledge of communicating in English

Module:1	**Social Interaction and Social Media**	**6hours**

Effective use of social media

Types of social media, Moderating personal information, Social media for job/profession, Communicating diplomatically

Networking on social media

Maximizing network with social media, How to advertise on social media

Event management

Event management methods, Effective techniques for better event management

Influencing

How to win friends and influence people, Building relationships, Persistence and resilience, Tools for talking when stakes are high

Conflict resolution

Definition and strategies , Styles of conflict resolution

Module:2	**Non Verbal Communication**	**6 hours**

Proxemics

Types of proxemics**,** Rapport building

Reports and Data Transcoding

Types of reports

Negotiation Skill

Effective negotiation strategies

Conflict Resolution

Types of conflicts

Module:3	**Interpersonal Skill**	**8 hours**

Social Interaction

Interpersonal Communication, Peer Communication, Bonding, Types of social interaction

Responsibility

Types of responsibilities, Moral and personal responsibilities

Networking

Competition, Collaboration, Content sharing

Personal Branding

Image Building, Grooming, Using social media for branding

Delegation and compliance

Assignment and responsibility, Grant of authority, Creation of accountability

Module:4	Quantitative Ability	10hours

Number properties

Number of factors, Factorials, Remainder Theorem, Unit digit position, Tens digit position

Averages

Averages, Weighted Average

Progressions

Arithmetic Progression, Geometric Progression, Harmonic Progression

Percentages

Increase & Decrease or successive increase

Ratios

Types of ratios and proportions

Module:5	Reasoning Ability	8hours

Analytical Reasoning

Data Arrangement(Linear and circular & Cross Variable Relationship), Blood Relations, Ordering/ranking/grouping, Puzzletest, Selection Decision table

Module:6	Verbal Ability	7hours

Vocabulary Building

Synonyms & Antonyms, One word substitutes, Word Pairs, Spellings, Idioms, Sentence completion, Analogies

	Total Lecture hours:	45hours	

Text Book(s)

1.	FACE, Aptipedia Aptitude Encyclopedia, 2016, First Edition, Wiley Publications, Delhi.
2.	ETHNUS, Aptimithra, 2013, First Edition, McGraw-Hill Education Pvt.Ltd.
3.	Mark G. Frank, David Matsumoto, Hyi Sung Hwang, Nonverbal Communication: Science and Applications, 2012, 1st Edition, Sage Publications, New York.

Reference Books

1.	Arun Sharma, Quantitative aptitude, 2016, 7th edition, Mcgraw Hill Education Pvt. Ltd.
2.	Kerry Patterson, Joseph Grenny, Ron McMillan, Al Switzler, Crucial Conversations: Tools for Talking When Stakes are High,2001,1st edition McGraw Hill Contemporary, Bangalore.
3.	Dale Carnegie, How to Win Friends and Influence People, Latest Edition,2016. Gallery Books, New York.

Mode of evaluation:FAT, Assignments, Projects, Case studies, Role plays,
3 Assessments with Term End FAT (Computer Based Test)

Recommended by Board of Studies	09/06/2017		
Approved by Academic Council	No 45	Date	15/06/2017

Course code			L	T	P	J	C
STS2012	**INTRODUCTION TO ETIQUETTE**		**3**	**0**	**0**	**0**	**1**
re-requisite	**None**		**Syllabus version**				
							2

Course Objectives:

- To enhance the logical reasoning skills of the students and improve the problem-solving abilities
- To strengthen the ability to solve quantitative aptitude problems
- To enrich the verbal ability of the students
- To develop the self-presentation skills

Expected Course Outcome:

1. Interact confidently and use decision making models effectively.
2. Deliver impactful presentations.
3. Be proficient in solving quantitative aptitude and verbal ability questions effortlessly.

Student Learning Outcomes (SLO):	**10, 18**

[10] Having a clear understanding of professional and ethical responsibility.

[18] Having critical thinking and innovative skills.

Module:1	**Impression Management**		**8 hours**

Types and techniques
Importance of impression management, Types of impression management, Techniques and case studies,Making a good first impression in an interview (TEDOS technique) , How to recover from a bad impressions/experience, Making a good first impression online
Non-verbal communication and body language
Dressing, Appearance and Grooming, Facial expression and Gestures, Body language (Kinesics), Keywords to be used, Voice elements (tone, pitch and pace)

Module:2	**Thinking Skills**		**4 hours**

Introduction to problem solving process
Steps to solve the problem, Simplex process **Introduction to decision making and decision making process** Steps involved from identification to implementation**,** Decision making model

Module:3	**Beyond Structure**		**4 hours**

Art of questioning
How to frame questions, Blooms questioning pyramid, Purpose of questions
Etiquette
Business, Telephone etiquette, Cafeteria etiquette, Elevator etiquette, Email etiquette, Social media etiquette

Module:4	Quantitative Ability	9 hours

Profit and Loss
Cost Price & Selling Price, Margins & Markup
Interest Calculations
Simple Interest, Compound Interest, Recurring
Mixtures and solutions
Ratio & Averages, Proportions
Time and Work
Pipes & Cisterns, Man Day concept, Division Wages
Time Speed and Distance
Average speed, Relative speed, Boats and streams.
Proportions & Variations

Module:5	Reasoning Ability	11 hours

Logical Reasoning
Sequence and series, Coding and decoding, Directions   **Visual Reasoning**
Abstract Reasoning, Input Type Diagrammatic Reasoning, Spatial reasoning, Cubes
Data Analysis And Interpretation
DI-Tables/Charts/Text

Module:6	Verbal Ability	9 hours

Grammar
Spot the Errors, Sentence Correction, Gap Filling Exercise, Sentence Improvisations, Misc.
Grammar Exercise

	Total Lecture hours:	45 hours	

Text Book(s)

1.	MichealKallet,Think Smarter: Critical Thinking to Improve Problem-Solving and Decision-Making Skills, April 7, 2014, 1st Edition, Wiley, New Jersey.
2.	MK Sehgal, Business Communication, 2008, 1st Edition, Excel Books,India.
3.	FACE, Aptipedia Aptitude Encyclopedia, 2016, First Edition, Wiley Publications, Delhi.
4.	ETHNUS, Aptimithra, 2013, First edition, McGraw-Hill Education Pvt.Ltd, Bangalore.

Reference Books

1.	**1.** Andrew J. DuBrin,Impression Management in the Workplace: Research, Theory and Practice, 2010, 1st edition, Routledge.
2.	Arun Sharma, Manorama Sharma, Quantitative aptitude, 2016, 7th edition, McGraw Hill Education Pvt. Ltd, Banglore.
3.	M. Neil Browne, Stuart M. Keeley, Asking the right questions, 2014, 11th Edition, Pearson, London.

Mode of Evaluation: FAT, Assignments, Projects, Case studies, Role plays,

3 Assessments with Term End FAT (Computer Based Test)			
Recommended by Board of Studies	09/06/2017		
Approved by Academic Council	No 45	Date	15/06/2017

Course code		L	T	P	J	C
STS3003	**PREPAREDNESS FOR EXTERNAL OPPORTUNITIES**	3	0	0	0	1
Pre-requisite	**None**	Syllabus version				

Pre-requisite	**None**	**Syllabus version**
		2

Course Objectives:

- To develop the students' logical thinking skills.
- To learn the strategies of solving quantitative ability problems.
- To enrich the verbal ability of the students.
- To enhance presentation skills of the students.

Expected Course Outcome:

1. Be proficient in solving quantitative aptitude and verbal ability questions of various examinations effortlessly.
2. Communicate the message to the target audience clearly.
3. Enabling students to use relevant aptitude and appropriate language to express themselves.

Student Learning Outcomes (SLO):	**9,18**

Module:1	**Interview Skills**	**3 hours**

Types of interview
Structured and unstructured interview orientation, Closed questions and hypothetical questions, Interviewers' perspective, Questions to ask/not ask during an interview
Techniques to face remote interviews
Video interview, Recorded feedback , Phone interview preparation
Mock Interview
Tips to customize preparation for personal interview, Practice rounds

Module:2	**Resume Skills**	**2 hours**

Resume Template
Structure of a standard resume**,** Content, color, font
Use of power verbs
Introduction to Power verbs and Write up
Types of resume
Quiz on types of resume
Customizing resume
 Frequent mistakes in customizing resume, Layout - Understanding different company's requirement, Digitizing career portfolio

Module:3	**Presentation Skills**	**6 hours**

Preparing presentation
   10 tips to prepare PowerPoint presentation**,** Outlining the content, Passing the Elevator Test

Organizing materials
Blue sky thinking, Introduction , body and conclusion, Use of Font, Use of Color, Strategic presentation
Maintaining and preparing visual aids

Importance and types of visual aids, Animation to captivate your audience, Design of posters

Dealing with questions

Setting out the ground rules, Dealing with interruptions, Staying in control of the questions, Handling difficult questions

Module:4	Quantitative Ability	14hours

Permutation-Combinations

Counting, Grouping, Linear Arrangement, Circular Arrangements

Probability

Conditional Probability, Independent and Dependent Events

Geometry and Mensuration

Properties of Polygon, 2D & 3D Figures, Area & Volumes

Trigonometry

Heights and distances, Simple trigonometric functions

Logarithms

Introduction, Basic rules

Functions

Introduction, Basic rules

Quadratic Equations

Understanding Quadratic Equations, Rules & probabilities of Quadratic Equations

Set Theory

Basic concepts of Venn Diagram

Module:5	Reasoning Ability	7hours

Logical reasoning

Syllogisms, Binary logic, Sequential output tracing, Crypto arithmetic

Data Analysis and Interpretation

Data Sufficiency

Data interpretation-Advanced Interpretation tables, pie charts & bar chats

Module:6	Verbal Ability	8hours

Comprehension and Logic

Reading comprehension

Para Jumbles

Critical Reasoning :

Premise and Conclusion, Assumption & Inference, Strengthening & Weakening an Argument

Module:7	Writing Skills	5hours

Note making

What is note making, Different ways of note making

Report writing

What is report writing, How to write a report, Writing a report & work sheet

Product description

Designing a product, Understanding it's features, Writing a product description

Research paper

Research and its importance, Writing sample research paper

		Total Lecture hours:	**45hours**	

Text Book(s)

1.	Michael Farra, Quick Resume & Cover letter Book, 2011, 1st Edition, JIST Editors, Saint Paul.
2.	Daniel Flage, An Introduction to Critical Thinking, 2002, 1st Edition, Pearson, London.

Reference Books

1.	FACE, Aptipedia Aptitude Encyclopedia, 2016, 1st Edition, Wiley Publications, Delhi.
2.	ETHNUS, Aptimithra, 2013, 1st Edition, McGraw-Hill Education Pvt. Ltd.

Mode of Evaluation: FAT, Assignments, Projects, Case studies, Role plays,
3 Assessments with Term End FAT (Computer Based Test)

Recommended by Board of Studies	09/06/2017		
Approved by Academic Council	No 45	Date	15/06/2017

Course code			L	T	P	J	C
MMA1001	**MULTIMEDIA SYSTEMS**		**3**	**0**	**0**	**0**	**3**
Pre-requisite	**NIL**		**Syllabus version**				

Course Objectives:

This course is aimed at:
1. To learn the basics and Fundamentals of Multimedia.
2. To introduce Multimedia components and Tools.
3. To understand how Multimedia can be incorporated

Expected Course Outcome:

At the end of this course, the students will be able to,
1. Define what Multimedia is and how that works.
2. Understand multimedia components using various tools and techniques.
3. Analyze and interpret Multimedia data.
4. Discuss about different types of media format and their properties.
5. Justify the right way of manipulating multimedia systems.

Student Learning Outcomes (SLO):	**2, 8, 9**

[2] Having a clear understanding of the subject related concepts and of contemporary issues
[8] Having Virtual Collaborating ability.
[9] Having problem solving ability- solving social   issues and engineering problems

Module:1	**Multi Media Fundamentals**	**4 hours**

Multimedia, Multimedia Objects, Multimedia in business and work, Multimedia hardware,
Memory & Storage devices, Communication devices.

Module:2	**Multimedia Tools**	**5 hours**

Presentation tools, object generation which includes video sound; image capturing, Authoring tools,
card and page based authoring tools.

Module:3	**Sound/Audio**	**7 hours**

Perception of sound, hearing sensitivity, frequency range, sound- wave length, the speed of sound.
measuring the sound, musical sounds, noise signal, dynamic range, pitch, harmonics-equalization-
reverberation time, Sound isolation and room acoustics- treatments- studio layout –room
dimensions. The Basic set-up of recording system; The production chain and responsibilities.
Microphones types -phantom power, noise, choosing the right mike; Mixing console; Input devices;
Output devices; Audio Publishing

Module:4	**Graphics /Image**	**7 hours**

image file formats and how and where it is used, Principles of animation,2D and 3D animation,
Morphing, Kinematics, tweening, Motion capture, character animation, modeling, special effects,
and compositing, Video Conferencing, Web Streaming, Video Streaming, Internet Telephony -
Virtual Reality - Artificial intelligence.

Module:5	**Video**	**6 hours**

 different types of video camera including Handy Camera, Tape Formats, Analog Editing, Editing

Equipment's and Consoles, Video Signal, Video Format, Video Lights - Types and Functions. Uses of Tripod- Types. Clapboard- Usage. Light meter. Other Useful Accessories.

Module:6	Motion Picture	7 hours

analogue and Digital camera, About lenses-viewing and monitoring - ENG-EFP - Types of Films - various storage media - Types of lights - video lights - cine lights – reflectors - Digital Video Camera- Types Format-Major Components, Operation and Functions? Aperture Shutter. Focusing Methods. Focal Length. Depth of Field

Module:7	Post Production	7 hours

post production setup like Architecture of a sound card, various video standards, capturing card - Media systems - Linear editing ,Nonlinear editing Video mixers and its functions, effects – plugins; Various display devices - personal, retail, corporate - LCD - Plasma - Media servers- Streaming - Graphic cards - video games - various mobile devices -narrow casting protocols - personal casting devices.

Module:8	Contemporary issues	2 hours

Emerging Fields in Multimedia Technology –Industry Expert Talk

	Total Lecture hours:	45 hours

Text Book(s)		
1.	Tay Vaughan, Multimedia: Making it Work (with CD), 9th Edition, McGraw Hill Education	
Reference Books		
1.	Ranjan Parekh, Principles of Multimedia, 2nd Edition, McGraw Hill Education, 2013.	
	Mode of Evaluation: CAT/Assignment/Quiz/FAT	

Recommended by Board of Studies	12.6.2015		
Approved by Academic Council	No. 37	Date	16.6.2015

Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

Course code			L	T	P	J	C
MMA1002		**MEDIA ETHICS**	**2**	**0**	**0**	**0**	**2**
Pre-requisite	**NIL**		**Syllabus version**				

Course Objectives:

The course is aimed :

1. To provide a basic knowledge of the Indian constitution.
2. To focus on various laws related to media in India.
3. To educate the students on ethics to be possessed by media professionals.

Expected Course Outcome:

At the end of the course the student should be able to

1. Understand the media laws of our Indian Constitution.
2. Discuss case studies on society, environment, culture, broadcasting and media.
3. Identify Copyright Acts pertaining to their productions
4. Examine and analyze ethical components of contemporary media
5. Analyze audience usage patterns of varied social media applications

Student Learning Outcomes (SLO):	**2,3,18**

[2] Having a clear understanding of the subject related concepts and of contemporary issues
[3] Having an ability to be socially intelligent with good SIQ (Social Intelligence Quotient) and
EQ (Emotional Quotient)
[18] Having critical thinking and innovative skills

Module:1	**Media Ethics**	**5 hours**

Understanding Ethics – Difference between law and ethics – Ethical approaches, theories and professional morality – Ethical issues in mass media – Importance of media ethics to the society.

Module:2	**Media Regulations**	**5 hours**

Media role in information broadcasting – education – entertainment – commercial – religion & cultural integration – government & politics – health issues – economics – state security and reformation

Module:3	**Media & Society**	**3 hours**

Media industry - Social, Political and Cultural Influence - Information Society - Media Privatization - Media Audiences - Media and Social change

Module:4	**Media Reputation**	**3 hours**

Reputationand Dignity of persons – Defamation – Sedition – Privacy – Obscene, Indecent and harmful publications – plagiarism.

Module:5	**New Media and Agenda Setting**	**5 hours**

Intellectual and Institutional – copyright – new media – protection of news sources – contempt of court. Media uses and effects - individual characteristics - expectations - perceptions of media - uses and gratification theory. Agenda setting: media agenda, public opinion - media opinion – media gatekeepers - sources of media control.

Module:6	**Indian constitution**	**4 hours**

Freedom of media in India – Code of Ethics and guidelines for the media – Constitutional provisions for freedom of media in India – Reasonable restrictions as imposed by the constitution – major laws related to media in India

Module:7	Media regulation	3 hours

The McBride commission – NANAP and NWICO – The Press Council Act and the Press Council of India – TRAI – Broadcasting bill and the BRAI – Indian Broadcasting Federation – Lokpal Bill and Lokayukta.

Module:8	Guest Lecture	2 hours

Expert talk on the recent advancements of media, society and ethics.

		Total Lecture hours:	30 hours

Text Book(s)

1.	ParanjoyGuhaThakurta, Dr.M.ManzoorAlam, R Mansukhani , R Mnaqlcolm, Mohd Z Haque "Media in our Globalizing World", Genuine Publications and Media Pvt Ltd; First Edition edition, 2015.

Reference Books

1.	Jane Kirtley "Media Law Handbook", Bureau of International Information Programs United States Department of State, Published in 2010.
	Authors, book title, year of publication, edition number, press, place

Mode of evaluation: CAT/ASSIGNMENTS/ SEMINAR/QUIZ/ FAT			
Recommended by Board of Studies	05-10-2017		
Approved by Academic Council	No. 47	Date	05-10-2017

Course code			L	T	P	J	C
MMA 1003	**DESIGN FUNDAMENTALS**		**0**	**0**	**6**	**0**	**3**
Pre-requisite	**NIL**		**Syllabus version**				

Course Objectives:

The course is aimed:
1. To provide a comprehensive knowledge about design theory, process, principles and elements
2. To understand basic terminology, progress, issues, and trend.
3. To study the various applications of design techniques.

Expected Course Outcome:

At the end of the course the student should be able to:
1. Understand and apply principles of designs into given projects
2. Acquire and analyze different ideas about designs and its implementations
3. Possess good knowledge about industry standards of contemporary design and its implementations
4. Demonstrate progress in basic design shapes and color
5. Creative portfolio with industrial standards

Student Learning Outcomes (SLO):	**2,18,20**

[2] Having a clear understanding of the subject related concepts and of contemporary issues
[18] Having critical thinking and innovative skills
[20] Having a good digital footprint

Module:1	**Creating different shapes on paper**	**10 hours**

1. Drawing geometric shapes
2. Drawing organic shapes
3. Creating design patterns using both geometric and organic shapes

Module:2	**Creating Color wheel: understanding the relationships between colors in design: Color Theory**	**10 hours**

1. Creating 12 shades color wheel according to the color theory
2. Creating black and white color and tone shade card
3. Creating analogous and complementary color wheel

Module:3	**Creating Value chart with poster color**	**10 hours**

1. Creating the color value cart with 4 colors (red, blue, green, yellow)
2. Creating various designs with shape and color following the color theory and value chart
3. Creating Achromatic, monochromatic and polychromatic designs following the value chart and color theory

Module:4	**Learning Typography**	**10 hours**

1. Learning and drawing about different kinds of typography and their implementations
2. Writing different words in styles of typography reflecting the meaning of the words.

Module:5	Creating Logo Designs	10 hours

1. Drawing logo designs of different genres of industries(educational, commercial, entertaining, government etc)
2. Creating different kinds of logos with shapes(geometric and organic shapes)
3. Creating different kinds of logos with colors(following color theory)
4. Creating different kinds of logos using shapes, colors and typography.

Module:6	Creating Design Layouts	10 hours

1. Creating design sheets (A4 size) using shapes, colors, typography and images as posters
2. Creating design sheets with only shapes and colors
3. Creating design sheets with typefaces(eg: wordcloud)
4. Creating design sheets with images(hand drawn or printed images(collages)

Module:7	Understanding Graphic images	10 hours

1. Design and create layouts with images (clipart, drawing, photograph etc)
2. Design and create layouts for film posters with graphic images (eg minimal posters)
3. Creating layout for banners and hoardings with measurement of images and typography

Module:8	Understanding Brochure: Creating brochures	10 hours

1. Designing brochure in simple folds process and basic layout
2. Designing colored and texted brochure in different folds
3. Designing achromatic, monochromatic and polychromatic brochures

Module:9	Understanding book cover design: creating book covers	5 hours

1. Designing the draft and sketches of book cover of different genres
2. Designing book cover in proper measurements with color and text.
3. Designing achromatic, monochromatic and polychromatic book covers

Module:10	Creating Design Portfolio	5 hours

1. Finalizing and checking all the designs and drafts
2. Creating the portfolio and designing each page of the portfolio to make it more attractive and effective

		Total laboratory hours:	**90 hours**

Text Book(s)

1.	Rose Gonnella, Christopher Navetta, Max Friedman, Design Fundamentals: Notes on Visual Elements and Principles of Composition, 2015, 2nd edition, Peachpit Press
2.	David A. Lauer, Stephen Pentak, Design Basics, 2012, Eighth edition, Wadsworth Cengage Learning.

Reference Books

1.	Tina Sutton And Bride M. Whelan, The Complete Color Harmony, 2014, 2nd Edition Impact Publication.
2.	Timothy Samara, Making And Breaking The Grid,2015, 2nd Publication, Rockport Publication.

Mode of Evaluation: Assignment / FAT

Recommended by Board of Studies	12-08-2017		
Approved by Academic Council	No. 47	Date	05-10-2017

Course code			L	T	P	J	C
MMA 1004		**FUNDAMENTALS OF ART**	**0**	**0**	**8**	**0**	**4**
Pre-requisite	**NIL**		**Syllabus version**

Course Objectives:

The course is aimed:

1. To provide a comprehensive introduction to fundamentals of art
2. To understand the basic techniques about figure drawing, cartooning, composition of a scene or background and designs.
3. To learn the nuances in creating organic drawings.

Expected Course Outcome:

At the end of the course the student should be able to:

1. Understand and apply techniques about drawing and sketching
2. Acquire knowledge about the basics forms of arts required for animation courses
3. Design and draw simple drawings in pencil and color about a given subject or concept
4. Demonstrate progress in human figure, cartoon, animals, birds and humanoids
5. Create character development portfolio with industrial standards

Student Learning Outcomes (SLO):	2,18,20

[2] Having a clear understanding of the subject related concepts and of contemporary issues
[18] Having critical thinking and innovative skills
[20] Having a good digital footprint

Module:1	Study of light and shade, outline drawing of still life objects	12 hours

1. Study of light and shade in pencil of still life object
2. Drawing still life objects in outline by pen and pencil
3. Study of still life objects in pen and ink to trace the light and shade

Module:2	Developing the 3D character by different types of sketching	8 hours

1. Drawing any object in 3d style of drawing by following the light and shade
2. Drawing any object in 3d style of drawing by following the geometric planes.

Module:3	Perspective drawings	12 hours

1. Learning one point perspective
2. Learning two point perspective
3. Learning three point perspective

Module:4	Outdoor studies in perspective	12 hours

1. Drawing outdoor scenes showing one point perspective
2. Drawing outdoor scenes showing two point perspective
3. Drawing outdoor scenes showing three point perspective

Module:5	Indoor/ architectural studies in perspective	12 hours

1. Drawing indoor/architectural scenes showing one point perspective

2. Drawing indoor/architectural scenes showing two point perspective   Drawing indoor/architectural scenes showing three point perspective
3. Drawing a complete scene as a background for an animation/film scene/graphic novel etc. having different perspective views and light and shade

Module:6	Creating compositional scene	12 hours

1. Understanding a scene for a background of animation/film/graphic novel etc and preparing a sketch according to a conception
2. Drawing in details different objects and attributes of the scene in pencil and with light and shade
3. Creating a panorama view of a composition in details with perspectives and proper light and shade

Module:7	Human proportion	20 hours

1. Drawing the male figure with proper proportion
2. Drawing the female figure with proper proportion
3. Drawing the male face with proper proportion
4. Drawing the female face with proper proportion
5. Drawing the hands and legs with proper proportion

Module:8	Drawing human figure with clothes and folds	8 hours

1. Drawing male figure with clothes understanding the folds in basic postures
2. Drawing female figure with clothes understanding the folds in basic postures

Module:9	Drawing the human figure in basic movements: understanding the stick figure	12 hours

1. Drawing the human figure as stick figure in different postures and gestures
2. Tracing the movement of the stick figure from sports and fashion magazine postures
3. Drawing the stick figure tracing the movements from life study in outdoor.

Module:10	Drawing animal figures with proper proportions and movements	8 hours

1. Drawing simple animal figures (dogs, cat, horse, elephants etc) in proper proportion

Module:11	Development of a cartoon character	4 hours

1. Study of different types of cartoon character
2. Creating cartoon character in reference to existing cartoon character and changing them to create characters of owns idea.
3. Creating a group of character for a given story or sequence
4. Creating a group of character for a given story or sequence

	Total laboratory hours	120 hours

Text Books

1.	Aditya Chari, "Figure study made easy", 2nd edition, Grace Prakashan, 2014

Reference Books

1.	Chris Hart, "Cartooning: the ultimate character design book" 6th edition, 2014

2.	Wells, P. The Fundamentals of Animation. AVA Publishing, 2012		
Mode of Evaluation: Assignment / FAT			
Recommended by Board of Studies	12-08-2017		
Approved by Academic Council	No. 47	Date	05-10-2017

Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

Course code			L	T	P	J	C
MMA1005	**PROGRAMMING FUNDAMENTALS**		**3**	**0**	**2**	**0**	**4**
Pre-requisite	**NIL**		**Syllabus version**				

Course Objectives:

The course is aimed :
1. To enable students to understand fundamentals of programming language.
2. To gain knowledge in designing multimedia elements using code.
3. To enable students to develop game programs using Graphics.

Expected Course Outcome:

At the end of the course the student should be able to :
1. Discuss the ways to represent different types of data, visually.
2. Justify suitable methods to process information according to variable types.
3. Develop programs for real time application using basics of programming language.
4. Design various multimedia elements using code.
5. Create simple game programs using C/ C++ programming language.

Student Learning Outcomes (SLO):	**2,12,18**

[2] Having a clear understanding of the subject related concepts and of contemporary issues
[12] Having adaptive thinking and adaptabilities
[18] Having critical thinking and innovative skills

Module:1	**Introduction to C:**	**6 hours**

Primitive Data types-Variables Constants,-Expressions, Basic Input/ Output operations (scanf(), printf()), Operators (arithmetic, relational, logical, bitwise and assignment operators).

Module:2	**Control Statements:**	**6 hours**

Decision making and Branching (if else, conditional, switch case), Looping (while(), do…while(), for loop, break and continue)

Module:3	**Arrays and String Handling:**	**6 hours**

Arrays (single and multi-dimension), character array, strings and standard library (strlen(), strcpy(), strcat() etc.)

Module:4	**Functions**	**6 hours**

Functions: Prototype – declaration - arguments (formal and actual), pass by value, pass by reference – return types

Module:5	**Function Types:**	**6 hours**

Types of functions; difference between built-in and user-defined functions; Template Functions-Recursive functions

Module:6	**Classes:**	**6 hours**

Data Abstraction –Encapsulation -Classes – objects – constructor – destructor – types of inheritance – Single – hierarchical– multiple – multi level – hybrid, dynamic memory allocation – new, delete operators.

Module:7	Application of C++ programming in UI	7 hours
GUI design – Menu creation – evolution of programming for game development		
Module:8	Guest Lecture	2 hours
Expert talk on Application of C++ programming in Gaming.		
	Total Lecture hours:	45 hours

Text Book(s)

1.	Byron Gottfried and Jitender Chhabra, "C Programming with C (Schaum's Outlines Series)", Fifth Edition,McGraw Hill Education, 2015.

Reference Books

1.	Michael vine and Keith Davenport, "C Programming for the Absolute Beginner", 3rd revised edition, CengageLearning Custom Publishing, 2015.

Mode of Evaluation: CAT / Assignment / Quiz / FAT / Project / Seminar

List of Challenging Experiments	
I/O Programming	
Case Studies with Multi-Dimensional Array	
Programming with Classes and Objects	
Constructors and Destructors	
Dynamic Memory Allocation	
Mode of Evaluation : Assessment / FAT	

Recommended by Board of Studies	12.6.2015		
Approved by Academic Council	No. 37	Date	16.6.2015

Course code			L	T	P	J	C
MMA1006	**GRAPHIC DESIGN TECHNIQUES**		**0**	**0**	**8**	**4**	**5**
Pre-requisite	**NIL**		**Syllabus version**				

Course Objectives:

The course is aimed to:

1. Acquire the competency in technical skills applicable to graphic design.
2. Understand the ability to use design thinking strategies in an iterative design process.
3. Enrich the skill level of graphic design through the topics

Expected Course Outcome:

At the end of the course the student should be able to:

1. Seek design principles, design process, theory, history and contemporary design practice.
2. Gain proficiency in identified technical skills, understand the process of creating, analyzing, and evaluating graphic design solutions.
3. Justify the choice of appropriate tools according to the type of digital art work
4. Visualize and demonstrate an idea and express it through visual design
5. Demonstrate the knowledge of design & colors and apply them effectively to various assignments.

Student Learning Outcomes (SLO):	**2,8,20**

[2] Having a clear understanding of the subject related concepts and of contemporary issues
[8] Having Virtual Collaborating ability
[20] Having a good digital footprint

Module:1	**Logo Design**	**10 hours**

- Creating a paper work of different logos on the genre.
- Tracing the layout of the approved designs in digital format.
- Applying suitable color for the digital designs.
- Designing approved different logos on the genre.

Module:2	**Visiting Cards**	**10 hours**

- Creating a paper work of different Visiting cards on the genre.
- Tracing and designing the approved layout of designs in digital format.

Module:3	**Brochures (A4 Size, A4 2 Fold, A4 3 Fold)**	**10 hours**

- Creating a paper work of brochures on the genre.
- Tracing the layout of the approved designs in digital format.
- Applying suitable color for the digital designs.
- Designing approved brochures of varied sizes.

Module:4	**Print Advertisement - Black & White, Color**	**10 hours**

- Creating a paper work of advertisement flyers on the genre.

- Tracing the layout designs in digital format and applying suitable colors.
- Creating a paper work of poster advertisement on the genre.
- Tracing the layout designs in digital format and applying suitable colors

Module:5	Letter Head	10 hours

- Creating paper work of letter head designs.
- Tracing the layout designs in digital format, designing and applying suitable colors.

Module:6	Package Design	10 hours

- Creating a paper work of package designs on the genre.
- Tracing the layout of the approved designs in digital format.
- Designing approved package designs with suitable colors and text.

Module:7	Matte Painting	10 hours

- Create a different scenic view of a green pasture or a haunted village.
- Designing approved scenic view in digital format using the designing software.

Module:8	Montage	10 hours

- Create different montages on the topic Indian culture or eradication of poverty in the world.
- Compiling the approved pictures or materials using the designing software.

Module:9	Black & White to Color	10 hours

- Converting a black & white picture into colored using the image editing software.

Module:10	Newsletter	10 hours

- Creating a paper work of newsletter on the genre.
- Tracing and designing the approved layout of designs in digital format.

Module:11	Webpage Design	10 hours

- Creating a paper work of webpage designs on the genre.
- Designing the layout of the approved designs in digital format.

Module:12	Color Correction	10 hours

- Creating a paper work of art designs on the genre.
- Applying different colors to them by using suitable color modes.

	Total Laboratory hours:	120 hours	

Text Book(s)

1. Ellen Lupton "Graphic Design: The New Basics: Second Edition, Revised and Expanded", Princeton Architectural Press; Revised and updated edition (14 July 2015)

Reference Books

1.	David Dabner "Graphic Design School: A Foundation Course for Graphic Designers Working in Print, Moving Image and Digital Media", Thames & Hudson Ltd; 5th Revised edition (28 July 2014)

Mode of evaluation: Assignment / FAT

J Component Project (Sample)				
1.	Designing Marketing Materials for an Advertising company			
2.	Designing Promotional Material for a Startup Manufacturing company			
3.	Designing Advertising Material for a Shop			
4.	Designing graphical contents for an E- Commerce company			
5.	Creating Logo, Business card, Flyer, Letterhead, Id card, Newsletter, Brochure & Posters for a MNC			

Mode of evaluation: Review

Recommended by Board of Studies	12-6-2015		
Approved by Academic Council	No. 37	Date	16-6-2015

![Vellore Institute of Technology logo]

Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

Course code			L	T	P	J	C
MMA2001		**ART FOR ANIMATION**	**0**	**0**	**6**	**4**	**4**
Pre-requisite	**MMA1004**		**Syllabus version**				

Course Objectives:
The course is aimed:

1. To provide a comprehensive introduction to different techniques related to art for animation
2. To understand basic terminology, progress, issues, and trends.
3. To study the various application of art in creating animation projects.

Expected Course Outcome:
At the end of the course the student should be able to:

1. Understand and apply various techniques of drawing for animation.
2. Analyze a given story or scenario and draw necessary artworks related to it.
3. Process knowledge about art in animation field.
4. Understand and create the various human & animal figures for a given storyline or concept.
5. Design and finalize animation ready art-work.

Student Learning Outcomes (SLO):	**2,12,20**

[2] Having a clear understanding of the subject related concepts and of contemporary issues
[12] Having adaptive thinking and adaptability
[20] Having a good digital footprint

Module:1	**Developing Human Figure**	**9 hours**

1. Drawing male figure in geometric blocks
2. Drawing female figure in geometric blocks
3. Drawing different gestures and postures of male and female figures in geometric blocks taking reference from wooden model
4. Drawing life sketches of male and female figure in geometric blocks to understand the movements and 3d character

Module:2	**Developing human figure with detail body muscle**	**9 hours**

1. Drawing male figure with body muscles
2. Drawing female figure with body muscles
3. Drawing different gestures and postures of male and female figures with body muscles.

Module:3	**Portrait study**	**9 hours**

1. Detail portrait study of male face
2. Detail portrait study of female face

Module:4	**Character design**	**9 hours**

1. Drawing of a character according to a concept
2. Drawing the detail of the character with cloths and props according to a concept
3. Drawing the four angle views of a character with proper details according to a concept
4. Drawing different gestures and postures of a character with proper details according to a concept

Module:5	Completing character designs for a given concept story	9 hours

1. Drawing characters for a given concept story
2. Drawing the characters with props and dresses according to the story requirement
3. Drawing the characters in complete turnarounds

Module:6	Background for the story	9 hours

1. Developing the background, shot sequences for a concept story applying perspective views and foreshortening
2. Drawing the background in pencil sketch
3. Drawing the background in color details

Module:7	Prop design	9 hours

1. Drawing different kinds of props from real life
2. Developing different kinds of props according to a concept
3. Drawing different kinds of props with implementation and relevance to a character and story

Module:8	Complete setup drawing	9 hours

1. Drawing the background and shot sequence for a given concept with details of characters and props
2. Developing five major scenes with all details of characters and props in pencil
3. Developing five major scenes with all details of characters and props in color

Module:9	Storyboard drawing	9 hours

1. Drawing simple storyboard according to a given storyline
2. Drawing simple storyboard according to an original story by the student

Module:10	Design a comic book/graphic novel	9 hours

1. Drawing the draft of a comic book or graphic novel
2. Drawing the details of the character and props for the graphic novel/comic book
3. Drawing the final book with details per block in black and white or in color

	Total Laboratory hours:	90 hours

Text Book(s)

1.	Don Bluth, "Art Of Animation Drawing", First Edition, DH Press,2014

Reference Books

1.	Walt Stanchfield, "Gesture Drawing for Animation",2015, 1st edition, Andrews McMeel Publishing 2015,
2.	Williams, R. The Animator's Survival Kit. Revised Edition, Faber & Faber 2011

Mode of Evaluation: Assignment / FAT

J Component Project (Samples)

1.	Character Model Sheet
2.	Props Model Sheet

3.	Background Model Sheet			
4.	Set Creation			
5.	Comic Character Model Sheet			
Mode of evaluation: Reviews				
Recommended by Board of Studies	12-06-2015			
Approved by Academic Council	No.37	Date	16-06-2015	

Course code			L	T	P	J	C
MMA2002	**INTERACTIVE ANIMATION TECHNIQUES**		**0**	**0**	**8**	**4**	**5**
Pre-requisite	MMA1004		**Syllabus version**				

Course Objectives:

The course is aimed at:
1. Developing the basic skills necessary for the student to produce digital character based animation, titles for film and video.
2. Learning and experiencing the arts of storytelling, animation and cinematography while making 2D animation movies, motion graphics, and GIF stickers.
3. Understanding principles that translate sequential images into action to make animation Believable

Expected Course Outcome:

By the end of the course, student should be able to:
1. Define and apply design principles and theories to animation production.
2. Evaluate and apply the 12 principles of animation based on the requirements of the storyline.
3. Assess, criticize the current animation trends in relation to the past trends.
4. Demonstrate progress in basic drawing and animation skills
5. Create traditional and computer generated 2D animation based on current industry trends and Practices

Student Learning Outcomes (SLO):	**2,12,18**

[2]Having a clear understanding of the subject related concepts and of contemporary issues

[12] Having adaptive thinking and adaptability

[18] Having critical thinking and innovative skills

Module:1	**Introduction to animation**	**08 hours**

- History of animation: Types of animation: case study
- Understanding and learning the Principles of animation through the view of different animation films: case study

Module:2	**Flip Book**	**08 hours**

- Drawing simple flip book with minimum 30 pages
- Drawing a detail flip book with minimum 30 pages following the principles of animation

Module:3	**2D Software Interface**	**08 hours**

- Understanding the 2d software interface
- Drawing tools, pen tools and other necessary tools to create any drawing in the frames.

Module:4	**Frame by frame animation**	**08 hours**

- Creating frame by frame animation for a short animation(maximum 10 sec with simple drawing.
- Creating simple frame by frame animation for a short animation(maximum 20 sec with color drawings and background.

Module:5	**Tween**	**16 hours**

- Creating simple animation with shape, classic & motion tweening.
- Creating simple animation with shape and classic tween together.

Module:6	Ball animation	16hours
	ᵛ Drawing the ball with gradient color .	
	ᵛ Creating key frames for the animation sequence	
	ᵛ Creating stretch and squash for the ball animation	
	ᵛ Creating timing and motion for the ball animation	
	ᵛ Giving tween to the sequence of ball animation	
	ᵛ Creating the shadow layer for the ball animation	
Module:7	Character drawing and creating symbols	12 hours
	ᵛ Drawing simple character with pen tool or shape tool	
	ᵛ Preparing the character for animation: dividing each body parts into symbol	
	ᵛ Creating symbols, types of symbols	
Module:8	Human walk cycle	08 hours
	ᵛ Drawing the cycle sheet for a human walk cycle.	
	ᵛ Creating the key frames for the walk cycle.	
	ᵛ Giving the tween to the figure with normal walk cycle.	
	ᵛ Creating four different types of walk cycle (jump, run, tip toe, crawl).	
Module:9	Animal walk cycle	16 hours
	ᵛ Drawing cycle sheet for an animal walk cycle	
	ᵛ Drawing an animal and dividing the body parts into symbols	
	ᵛ Creating the key frames for the walk cycle	
	ᵛ Creating four different types of walk cycle (jump, run, tip toe, crawl)	
Module:10	Lip Synchronization	8 hours
	ᵛ Knowing the alphabets and its movements	
	ᵛ Creating the mouth shapes for each letters and movements of the lips.	
	ᵛ Creating expression and emotion in character.	
	ᵛ Synchronizing character mouth shape according to the dialogue.	
Module:11	Creating a short animation film	12 hours
	ᵛ Drawing the detail storyboard for the animation film	
	ᵛ Drawing the background in layers and symbols	
	ᵛ Creating the characters in turn around	
	ᵛ Creating the props	
	ᵛ Creating the scenes with tween and animation	
	ᵛ Completing the whole animation film with background music and dialogues	
	Total Laboratory hours:	**120 hours**
Text Book(s)		
1.	Frank Thomas and Odie Johnson, The Illusion of Life: Disney Animation, Disney Editions; Rev Sub edition, 2014	
Reference Books		

1.	Williams, R. The Animator's Survival Kit. Revised Edition, Faber & Faber, 2011		

Mode of evaluation: Assignment /FAT			
J Component Project (Samples)			
1	One minute 2D Animated Short film		
2	30 sec Action Clip		
3	30 Sec Acting Clip		
4	2D motion graphics		
5	15 GIF stickers		
Mode of evaluation: Reviews			

Recommended by Board of Studies	12.08.2017		
Approved by Academic Council	No. 47	Date	5.10.2017

Course code			L	T	P	J	C
MMA2003	**WEB DESIGN TECHNIQUES**		0	0	6	4	4
Pre-requisite	**MMA1003**		**Syllabus version**				

Course Objectives:

The course is aimed to,
1. Highlight the theories and principles underlying website design
2. Understand the concept of design and implementation of HTML CSS to design a particular design of their creativity.
3. Understand the principles of creating an effective webpage, including an in-depth consideration of information architecture.

Expected Course Outcome:

At the end of the course the student should be able to,
1. Understand the latest trends used in web designing.
2. Demonstrate the knowledge and ability to apply the design principles, techniques and technologies to the development of creative websites.
3. Understand how to plan and conduct user research related to web-usability
4. Implement techniques of information design to interactive media projects.
5. Develop multi-tier fully functional commercial websites.

Student Learning Outcomes (SLO):	**2,3,18**

[2]Having a clear understanding of the subject related concepts and of contemporary issues
[3] Having an ability to be socially intelligent with good SIQ (Social Intelligence Quotient) and EQ (Emotional Quotient)
[18] Having critical thinking and innovative skills

Module:1	**Structure & Lists**	**10 hours**

1. Creating a structure of the web page layout.
2. Creating basic wireframe layout using Adobe Photoshop.
3. Creating lists using basic HTML coding.

Module:2	**Tables & Forms**	**10 hours**

1. Creating web layouts using tables method in Adobe Dreamweaver.
2. Creating forms using Dreamweaver.

Module:3	**Cascading Style Sheet**	**10 hours**

1. Working on the basics of Cascading Style Sheet.
2. Creating a basic layout using CSS styling.
3. Creating basic links for buttons using HTML coding.

Module:4	**Static Commercial**	**10 hours**

1. Creating rough paper work layout of a commercial static webpage for the genre.
2. Creating different sitemap layout of a commercial static webpage for the genre.
3. Creating banner advertisements related to commercial products for the static web-pages.
4. Designing approved commercial static responsive web-pages using HTML CSS .

Module:5	**Static Non - Commercial**	**10 hours**

1. Creating rough paper work layout of a non-commercial static webpage for the genre.

www.manaraa.com

2. Create different sitemap layout of a non-commercial static webpage for the genre.
3. Creating banner ads and pop up advertisements related to non-commercial products for the static web-pages.
4. Designing approved non-commercial static web-pages using HTML CSS.

Module:6	Dynamic Commercial	10 hours

1. Create a rough paper work layout of a commercial dynamic webpage for the genre.
2. Create rough paper work layout of a non-commercial dynamic webpage for the genre.
3. Create different sitemap layout of a commercial dynamic webpage for the genre.
4. Creating banner ads and pop-up ads related to genre for the dynamic web-pages.
5. Adding up banner ads and pop-up ads in dynamic webpage designs.

Module:7	Dynamic Non - Commercial	10 hours

1. Create different sitemap layout of a non-commercial dynamic webpage for the genre.
2. Designing approved commercial dynamic responsive web-pages using HTML CSS
3. Creating banner ads and pop-up ads related to non-commercial products for the dynamic web-pages.
4. Designing approved non-commercial dynamic web-pages using HTML CSS.

Module:8	Online Portfolio	10 hours

1. Creating blueprints for a creative portfolio.
2. Creating flowchart for a creative portfolio.
3. Creating sitemaps for a creative portfolio.
4. Designing approved designs using software's Flash and Photoshop.

Module:9	Static Responsive	10 hours

1. Creating blueprints, flowchart, sitemap for a creative responsive static page.
2. Designing approved designs using software's Flash and Dreamweaver.

	Total Laboratory hours:	90 hours

Text Book(s)

1.	Jon Duckett"HTML and CSSDesign and Build Websites" Paperback Wiley (18 November 2011).

Reference Books

1.	McFarland "Dreamweaver CS6The Missing Manual", Shroff/O'Reilly; First edition (27 August 2012) .

Mode of Evaluation: Assignment / FAT

J Component Project (Samples)		
1.	Pizza zone – Pizza selling website	
2.	Mobi world – Mobile selling website	
3.	Photography Portfolio website	
4.	Domain selling website	
5.	Graphic designs selling website	

Mode of evaluation: Reviews			
Recommended by Board of Studies	12.8.2017		
Approved by Academic Council	No. 47	Date	5.10.2017

Course code					L	T	P	J	C
MMA2004		**BASIC PHOTOGRAPHY**			**0**	**0**	**8**	**4**	**5**
Pre-requisite	**MMA1004**				**Syllabus version**				

Course Objectives:

The Course is aimed :
1. To understand the functional working of a still camera
2. To understand the Art of Composition, Framing and Lighting.
3. To create mood with lights and how to capture various emotions through camera.

Expected Course Outcome:

At the end of the course the student should be able to
1. Operate a Digital SLR Camera, Flash Lights and its related accessories.
2. Analyse and infer various conditions and environments for a photo-shoot and capture it.
3. Plan the requirements and complete a successful Product or a Model Shoot.
4. Visualize concepts and shoot photos based on a theme or a one-liner.
5. Appraise photographs based on Composition, Lighting, Subject and Mood.

Student Learning Outcomes (SLO):	**2,12,18**

[2] Having a clear understanding of the subject related concepts and of contemporary issues
[12] Having design thinking capability
[18] Having critical thinking and innovative skills

Module:1	**Basics of Camera**	**15 Hours**

How to handle Camera properly and take a shot
Setting Aperture, Shutter Speed and ISO for different Shots
White Balance and Shooting Modes in D-SLR Camera

Module:2	**Flash & Lights**	**15 Hours**

How to use 3 Point Lighting using Cool Lights
Flash settings and Operations
Use of Reflector, Cutter and Diffuser Handling
Use of Light Meter

Module:3	**Outdoor (Landscape & People)**	**15 Hours**

Outdoor – Landscape

Photo-shoot of Outdoor (Landscape)around the VIT Campus.
Color correction to the taken photos according to his creativity.

Outdoor – People

Photo-shoot of Outdoor (People)around the VIT Campus.
Color correction to the taken photos according to his creativity.

Module:4	**Outdoor (Birds & Animals**	**15 Hours**

Outdoor – Birds/Animals

Photo-shoot of Outdoor (Birds/Animals) around the VIT Campus
Color correction to the taken photos according to his creativity.

Module:5	**Outdoor – Monuments**	**15 Hours**

Outdoor – Monuments

Photo-shoot of Outdoor (monuments).

Color correction to the taken photos according to his creativity

Module:6	Photo Language And Portrait	15 Hours

Photo Language And Portrait:

Photo-shoot of photo language concept and portrait photography around the VIT campus.

Color correction to the taken photos according to his creativity.

Module:7	Freezing Moment and Panorama Special	15 Hours

Freezing Moment and Panorama Special

Photo-shoot of freezing moment and panorama. Student will take pictures of their own using panorama concepts round the VIT campus.

Color correction to the taken photos according to his creativity.

Module:8	Special Effects & Indoor Photography	15 Hours

Special Effects & Indoor Photography

Product photography

Macro photography

Event photography

Night photography

Festival photography

	Total Laboratory Hours:	120 Hours

Text Book(s)

1.	Kathy Burns-Millyard," Digital Photography Basics: A Beginner's Guide to Getting Great Digital Photos", 2014, second edition, published by electronic perceptions.

Reference Books

1.	DK,"The Beginner's Photography Guide", 2015, 2ndEdition, published by Penguin UK.

Mode of Evaluation: Assignment / FAT

J Component Project (Sample)		
1.	Taking Photos using Exposure Triangle	
2.	Photographing subjects using Controlled Lights and Flash	
3.	Outdoor & Candid Photography	
4.	Model & Indoor Photoshoot	
5.	Special Effects Photoshoot	

Mode of evaluation: Reviews

Recommended by Board of Studies	12-06-2015		
Approved by Academic Council	No. 37	Date	16-06-2015;05.10.2017

Course Code				L	T	P	J	C
MMA2005		**LIGHTING & RENDERING**		**0**	**0**	**6**	**4**	**4**
Pre-requisite	**MMA1004**			**Syllabus version**				

Course Objectives:

This course is aimed:
1. To create photorealistic still imagery.
2. To possess virtual lighting technologies and the tools necessary to create photorealistic imagery.
3. To understand the nuances of rendering pipeline and basic compositing.

Expected Course Outcome:

By the end of this course, the students will be,
1. Aware of the physical and virtual technology of lighting.
2. Sensitive to the interaction of light on 3D surfaces.
3. Creative in adjusting the renderer settings.
4. Capable to justify the optimal render settings for different types of 3D lit projects.
5. Able to tweak the material shaders in achieving desired output.

Student Learning Outcomes (SLO):	2,11,18

[2] Having a clear understanding of the subject related concepts and of contemporary issues
[11] Having interest in life-long learning
[18] Having critical thinking and innovative skills

Module:1	Lighting the 3D model using Basic lighting	15 hours

- Module content Preview Lights and to choose its Colors
- Point light and its properties
- Direction light and its properties
- Spot light, penumbra angle, Barn doors and its settings
- Area light and its implementation in real-time environment.

Module:2	Various Lighting Techniques	10 hours

- Software Lighting Techniques
- Light Intensity and Digital Colors
- Light Linking & Object Linking

Module:3	Rendering	10 hours

- Introduction about Renderer Nodes
- Interior scene lighting using GI renderer - Criteria 1
- Interior scene lighting using GI renderer - Criteria 2

Module:4	Product Lighting & Environment Lighting	15 hours

- Three Point Lighting Technique
- Lighting a product using three-point lighting techniques
- Photons and Caustics Lighting Methods
- Global Illumination and Final Gathering
- Photons and Caustics Lighting Methods

Module:5	Advanced Rendering materials	10 hours

- Advanced Materials for GI rendering
- Light Baking for Games
- Exploring Paint Effects features
- Layer Based Rendering and its Memberships

Module:6	Exterior and IBL Rendering	10 hours

- Image Based Lighting for a 3D Object
- Rendering an Exterior using Image based Lighting
- Optimization techniques for lighting the scene.

Module:7	Intro to Multi-pass rendering	10 hours

- Creating multiple pass rendering for 3D objects
- Customizing lights, Import and export settings.
- Materials and lighting techniques used for 3D tracking.

Module:8	Multi-pass Composition	10 hours

- Compositing Multiple pass rendering in to a single image/Video in image editing tool
- Compositing Multiple pass rendering in to a single image/Video in compositing tool
- Lighting a Photo-realistic scene based on a live Reference-Portfolio creation-1
- Lighting a Photo-realistic scene based on a live reference-Portfolio creation-2

		Total Laboratory hours:	90 hours	

Text Book(s)

1.	Jeremy Birn , " Digital Lighting and Rendering " , 3rd Edition , New Riders , 2013 .

Reference Books

1.	Lee Lanier , " Maya Studio Projects Texturing and Lighting " 1st Edition, Sybex, 2011.

Mode of Evaluation: Assignment / FAT

J Component Project (Samples)		
1.	Light and Render an Interior scene	
2.	Light and render a reflective environment with caustics	
3.	Render multi-frames and composite	
4.	Render environmental effects with Arnold	
5.	Indirect Lighting of an exterior.	

Mode of evaluation: Reviews

Recommended by Board of Studies	12.8.2017		
Approved by Academic Council	No. 47	Date	5.10.2017

Course code			L	T	P	J	C
MMA3001	**MODELING AND TEXTURING**		**0**	**0**	**8**	**4**	**5**
Pre-requisite	**MMA1004**		**Syllabus version**				

Course Objectives:

The course is aimed:
   1. To explore the principles of 3D design.
   2. To gain knowledge in creating 3D assets and product development.
   3. To create and texture a simple 3D Model.

Expected Course Outcome:

At the end of the course the student should be able to
   1 Create various 3D models according to the topology.
   2. Texture the 3D models by using UV unwrapping and shading techniques.
   3. Create realistic and semi realistic models with appropriate details in both mesh
      and texture level.
   4. Construct effective modeling & texturing pipeline.
   5. Justify the right modeling techniques while creating 3D assets.

Student Learning Outcomes (SLO):	**2,3,18**

[2] Having a clear understanding of the subject related concepts and of contemporary issues
[3] Having an ability to be socially intelligent with good SIQ (Social Intelligence Quotient) and
EQ (Emotional Quotient)
[18] Having critical thinking and innovative skills

Module:1	**Creating a 3D Scene from Primitives**	**10 hours**

1. Preview Lights and to choose its Colors
2. Point light and its properties
3. Direction light and its properties
4. Spot light, penumbra angle, Barn doors and its settings
5. Area light and its implementation in real-time environment.

Module:2	**Understanding the NURBS Primitives**	**10 hours**

1. Further introduction to the Maya GUI.
2. Polygon components (vertices, edges, faces).
3. Creating and editing geometry from primitives.
4. Groups and Hierarchies.
5. Duplication vs. Instancing.

Module:3	**Polygon mesh editing tools**	**15 hours**

1. Additive vs. subtractive Modeling.
2. Manually manipulating component.
3. Splitting polygons vs. deleting edges.
4. Polygon extrusion.

Module:4	**Working with Polygon Primitives**	**15 hours**

1. Creating basic block of interior house.
2. Adding detail into interior house.

3. Modeling various types of props for interior.
4. Creating model of exterior building.
5. Modeling various types of props for exterior.
6. Creating a 3D model of Urban.

Module:5	Materials and Texturing	15 hours

1. Understanding UV texture space.
2. Simple UV projection.
3. Introduction to materials and textures.
4. Basic lighting.

Module:6	Deformers	10 hours

1. Non-linear deformers.
2. Deformation order.
3. Hierarchies for animation

Module:7	NURBS and spline-based Modeling	15 hours

1. Basic NURBS spline-based Modeling concepts.
2. NURBS to polygon conversion.
3. Boolean Modeling techniques.
4. Construction history.
5. Essential steps to prepare a character model for animation.

Module:8	Modeling with Deformers	15 hours

1. Using Lattice.
2. Soft modification tool.
3. Combining meshes.
4. Using bevel plus and bevel edges.
5. Create an extrusion curve.
6. Extrude along a curve.

Module:9	Creating a mechanical object	15 hours

1. Creating a basic exterior of modern car.
2. Adding detail to exterior of modern car.
3. Modeling a basic interior of modern car.
4. Adding detail to interior of modern car.
5. Unwrapping UV of exterior car using UV Texture editor.
6. Unwrapping UV of interior car using UV Texture editor.
7. Creating textures using image-editing software.
8. Assigning materials to the car mesh.
9. Optimizing 3d car model.

	Total Laboratory hours:	120 hours

Text Book(s)

1.	Autodesk Maya Press, "Learning Autodesk Maya 2016: Foundation", John Wiley & Sons, 2015

Reference Books

1.	Todd Palamar, "Mastering Autodesk Maya 2016", 1st edition, sybex, 2015.

Mode of Evaluation: Assignment / FAT			
J Component Project (Samples)			
1.	Sci-Fi Laboratory		
2.	A Modern Gymnasium		
3.	Wild West Style Environment		
4.	Ancient Civilization –Environments, Assets & Artifacts		
5.	Medieval Musical Instruments		
Mode of evaluation: Reviews			
Recommended by Board of Studies	12.8.2017		
Approved by Academic Council	No. 47	Date	5.10.2017

Course code			L	T	P	J	C
MMA3002	**3D ANIMATION**		**0**	**0**	**8**	**0**	**4**
Pre-requisite	**MMA2001**		**Syllabus version**				

Course Objectives:

The course is aimed at:
1. Creating solid base in animation fundamentals.
2. Understanding different animation styles and techniques, and how to apply.
3. Enriching the student skill set to meet professional expectations necessary for a career in the expanding industry of entertainment.

Expected Course Outcome:

By the end of the course, student should be able to:
1. Apply principles to create realistic and cartoony animation.
2. Create believable body mechanics animation.
3. Explore the foundations of physics, weight and movement, and timing.
4. Integrate convincing body mechanics with action effectively.
5. Use high-quality references and artistic studies to create production quality work.

Student Learning Outcomes (SLO):	**2,12,18**

[2] Having a clear understanding of the subject related concepts and of contemporary issues
[12] Having adaptive thinking and adaptability
[18] Having critical thinking and innovative skills

Module:1	**Evaluation of Animation and its types.**	**15 hours**

- Understanding different styles of animation.
- Applying principles in inorganic animation

Module:2	**Understanding and Creating different rough walk cycle on paper using ball and leg character normal walk.**	**15 hours**

- Understanding the walk cycle techniques
- Drawing the basic walk cycle exercises on various style action basics
- Drawing the finalized walk cycle concept.

Module:3	**Understanding and Creating different rough walk cycle on paper using ball and leg character stylized walk.**	**10 hours**

- Understanding the walk cycle techniques and drawing the smart scribbles for sketch segmentation thumbnails of the walk cycle
- Drawing the basic walk cycle exercises on various style action basics
- Drawing the finalized walk cycle concept.
- Drawing the finalized concept

Module:4	**Key frame, Mixing up the finalized walk cycle concept and Appling with the basic 12 principles.**	**13 hours**

- Implementing the finalized concept with principles in software.
- Making blocking and finalize the blocking for approval.
- Creating the rough animation and in-betweens in blocking for approval.
- Adding additional smooth walk (secondary action) blocking for approval.
- Final rendered output of the walk cycle animation.

Module:5	Key frame, Creating animation using ball and tail character.	15 hours

- Creating the concept art for ball and tail character in paperwork using smart scribbles for sketch segmentation thumbnail.
- Making iteration on concept edge and finalization of the concept work in paper.
- Making blocking and finalize the blocking for approval.
- Creating the rough animation and in-betweens in blocking for approval.
- Adding additional smooth walk (secondary action) blocking

Module:6	Creating a story based concept involving the two characters ball, ball and tail animation for fast timing and acting sequence 1.	08 hours

- Creating the concept art of ball, ball and tail character in paperwork smart scribbles for sketch segmentation thumbnail.
- Making iteration on concept edge and finalization of the concept work in paper.
- Making blocking poses and finalizes the blocking for approval.
- Creating the rough animation (keying) and in-betweens in blocking for approval.
- Adding additional smooth walk (secondary action) blocking for approval.
- Final rendered output of the acting animation.

Module:7	Creating a story based concept involving the two characters' ball, ball and tail animation for slow timing and acting sequence 2.	05 hours

- Creating the concept art of ball, ball and tail character in paperwork smart scribbles for sketch segmentation thumbnail.
- Making iteration on concept edge and finalization of the concept work in paper.
- Making blocking poses and finalizes the blocking for approval.
- Creating the rough animation (keying) and in-betweens in blocking for approval.
- Adding additional smooth walk (secondary action) blocking for approval.
- Final rendered output of the acting animation.

Module:8	Creating references for animation in method acting.	08 hours

- Drawing the concept work on story and acting screen of the character like ball and tail, students will take the task of acting it out from their own story.
- Creating different kinds of acting and finalizing one of best.

	● Based the finalized act, student will proceed to 3d software animation, rough animation (keying) and in-betweens in blocking for approval. ● Adding additional smooth walk (secondary action) blocking for approval. ● Final output of the acting animation.	
Module:9	**Micro and Macro correction over finalized 3d animation for timing.**	**05 hours**
	● Appling principles according to the timing needs for giving more detail attraction over the character. ● Understanding and implementing the timing over character to show the mood.	
Module:10	**Creating facial expression on ball and tail character.**	**05 hours**
	● Shooting the facial action according to the own story, drawing the facial action execute as final facial expression. ● Implementing and transformation of action to 3d character ball and tail. ● Adding additional smooth pass (secondary action) for approval. ● Final rendered output of the acting animation. ● Introducing humanoid 3D Character for basic walk cycle.	
Module:11	**Understanding basic physical movement and its implementation drawing the smart scribbles for sketch segmentation thumbnail for the walk cycle.**	**21 hours**
	● Drawing the basic walk cycle exercises on various style action basics. ● Drawing the finalized walk cycle concept. ● Creating the rough animation (keying) and in-betweens in blocking for approval. ● Adding additional smooth walk (secondary action) blocking for approval. ● Final rendered output of the acting animation.	
	Total Laboratory hours:	**120 hours**
Text Book(s)		
	1. Frank Thomas and Odie Johnson, The Illusion of Life: Disney Animation, Disney Editions; Rev Sub edition, 2014	
Reference Books		
	1. Williams, R. The Animator's Survival Kit. Revised Edition, Faber & Faber, 2011	
	Mode of evaluation: Assignment /FAT	
Recommended by Board of Studies	12.06.2015	
Approved by Academic Council	No. 37	Date 16.06.2015

Course code			L	T	P	J	C
MMA3003		**VISUAL EFFECTS**	**0**	**0**	**8**	**4**	**5**
Pre-requisite	**MMA2004**			**Syllabus version**			

Course Objectives:

The course is aimed :
1. To learn the Basics of compositing using layer based compositing software.
2. To understand the tools and techniques of compositing.
3. **To practice the categories in compositing process.**

Expected Course Outcome:

At the end of the course student should be able to :
1. Gain good understanding about compositing process.
2. Identify major applications of compositing techniques used in industry.
3. Develop a visual effects pipeline.
4. Demonstrate an in-depth knowledge of grading and VFX principles, practice and system capabilities.
5. Create customized tools through software or scripting to allow for more creative application of visual effects techniques.

Student Learning Outcomes (SLO):	**2,12,18**

[2] Having a clear understanding of the subject related concepts and of contemporary issues.
[12] Having adaptive thinking and adaptability.
[18] Having critical thinking and innovative skills.

Module:1	**Animation and Titling**	**15 hours**

1. To understand interface of the layer based software and the basickey framing.
2. Basic motion graphic elements
3. Animation (every student will create their own animation using transformation tools and apply key frames for 150 frames)
4. Title Animation (Student will create titling using given footage by faculty)
5.Titling (own titling just using texts)

Module:2	**Color Correction, Color grading & Tint**	**15 hours**

1. To understand color correction options and methods.
2. Color Correction (using given footage by faculty).
3. Night Conversion (using given footage by faculty).
4. Night Conversion (using given footage by faculty).
5. Night Conversion (student will shoot his/her own footage and use it for day to night conversion)

Module:3	**Basic Composting**	**15 hours**

1. Compositing tools and properties.
2. Compositing (using given object by faculty) normal with animation.
3. Compositing (using given object by faculty) Green Screen.
4. Compositing (own footage) normal with animation.
5. Compositing (own footage) green screen.

Module:4	**Rotoscopy**	**15 hours**

1. Tools and techniques of doing a Rotoscopy.

2. Rotoscopy (using given footage by faculty)
3. Rotoscopy (using given footage by faculty)
4. Doing rotoscopy in own footage 150 frames

Module:5	Retouch /Paint	15 hours

1. To understand the paint tools
2. Retouch (using given object by faculty)
3. Wire removal (using given object by faculty)
4. Doing retouch in own footage 150 frames.

Module:6	Tracking	15 hours

1. To understand the tracking tools.
2. Tracking (using given object by faculty)
3. Match move (using given object by faculty)
4. Stabilization and camera shake (using given object by faculty)
5.Matchmove with own footage 250-300 frames

Module:7	3D Compositing	10 hours

1. To understand 3d compositing techniques.
2. Compositing (using given object by faculty) Green Screen.
3. Compositing (using given object by faculty)
4. Compositing (own footage) normal with animation
5. Compositing (own footage) green screen.

Module:8	Particle Effects	10 hours

1. To understand the Effects and particles
2. Effects (using given object by faculty) normal with Animation
3. Particle Compositing (using given object by faculty) Green Screen.
4. Compositing (own footage) green screen using effects.

Module:9	Show reel	10 hours

1. How to make show reels with break-downs.
2. The student will create a mini show reel (3-4min including breakdowns) using the skills he learned in this subject.
3. The Student will submit the final output in cd for screening.
4. Experts will review each student output and lecture about advanced compositing

	Total laboratory hours:	120 hours

Text Book(s)

1.	Mark Christiansen,"Adobe® After Effects® CC Visual Effects and Compositing Studio Techniques" 1st Edition, Peachpit Pearson Education, 2014.

Reference Books

1.	Jon Gress, "Visual Effects and Compositing" 1st Edition, Published by New Riders,2015

Mode of Evaluation: Assignment / FAT

J Component Project (Samples)		
1.	3D Match Move Project	

2.	Visual Effects Show reel			
3.	Retouch / Prep / Wire removal Project			
4.	Rotoscopy Project			
5.	Motion Graphics Project			
Mode of evaluation: Reviews				
Recommended by Board of Studies	12.6.2015			
Approved by Academic Council	No. 37	Date	16.6.2015	

Course code			L	T	P	J	C
MMA1008	**MULTIMEDIA DATABASES**		**2**	**0**	**0**	**0**	**2**
Pre-requisite	**NIL**				**Syllabus version**		

Course Objectives:

The Course is aimed at:

1. To understand fundamentals of database systems and multimedia DBMS
2. To introduce multimedia data management.
3. To inculcate different types of queries and indexing.

Expected Course Outcome:

At the end of this course, the students will be able to,

1. Acquire knowledge of Image databases, Text/Document databases, Audio and Video databases
2. Discuss multimedia retrieval techniques.
3. Justify the right querying and indexing methodologies.
4. Create database retrieval methods with suitable language.
5. Choose the appropriate DB tool to deal with Audio and Video databases.

Student Learning Outcomes (SLO):	**2,9,12**

[2]Having a clear understanding of the subject related concepts and of contemporary issues
[9] Having problem solving ability- solving social issues and engineering problems
[12]Having adaptive thinking and adaptability

Module:1	**DBMS Foundation:**	**5 hours**

Overview of Database Systems, Introduction to Database Design

Module:2	**Relational Model and SQL:**	**3 hours**

Relational Model, SQL: Queries, Constraints

Module:3	**Data Structure Essentials:**	**3 hours**

Multidimensional Data Structures k-d Trees, Point Quadtrees.

Module:4	**Multimedia Databases:**	**4 hours**

Design and Architecture of a Multimedia Database, Organizing Multimedia Data Based on The Principle of Uniformity, Media Abstractions

Module:5	**Querying and Indexing:**	**3 hours**

Query Languages for Retrieving Multimedia Data, Indexing SMDSs with Enhanced Inverted Indices.

Module:6	**Image Databases:**	**3 hours**

Raw Images, Compressed Image Representations, Similarity- Based Retrieval, Alternative Image DB Paradigms.

Module:7	Text/Document Databases:	4 hours
Text/Document Databases Precision and Recall, Stop Lists, Word Stems, and Frequency Tables, Latent Semantic Indexing, TV-Trees, Other Retrieval Techniques			
Module:8	Video and Audio Databases:	3 hours
Video Databases Organizing Content of a Single Video, Querying Content of Video Libraries, video Standards Audio Databases A General Model of Audio Data.			
	Expert talks on recent trends in Multimedia Database Technology and Content based Multimedia Indexing	2 hours
	Total Lecture hours:	**30 hours**

Text Book(s)	
1.	V.S. Subrahmanian, "Principles of Multimedia Database Systems", Morgan Kauffman, 2nd Edition,2013.
Reference Books	
1.	Raghu Ramakrishnan, Johannes Gehrke, "Database Management Systems", Third Edition 2014
2.	Andreas Wichert, "Intelligent Big Multimedia Databases", first edition, World Scientific Publishing Co, 2015

Recommended by Board of Studies	12.6.2015		
Approved by Academic Council	No. 37	Date	16.6.2015

Course Code			L	T	P	J	C
MMA2006	**USER INTERFACE**		**0**	**0**	**8**	**4**	**5**
Pre-requisite	**MMA1006**		**Syllabus version**				

Course Objectives:

Course is aimed at:

1. Interaction models, styles & design patterns
2. Interaction design for different application areas.
3. Analysis of a user interface from a communication perspective.

Expected Course Outcome:

At the end of course, students should be able to

1. Differentiate the tools and techniques involved in creating UI.
2. Identify and apply suitable methods to create UI from UX.
3. Justify design patterns and their applicability skill set.
4. Understand relation between interaction design and users expectations.
5. Ability to convert user needs into designs.

Student Learning Outcomes (SLO):	12, 16, 18

[12] Having adaptive thinking and adaptability
[16] Having a good working knowledge of communicating in English
[18] Having critical thinking and innovative skills

Module:1	**Introduction to UI (All hand sketch)**	**10 Hours**

1. Basic introduction about UI.

2. Analyzing existing UI.
3. Understanding and differentiation of IOS, Android and windows platforms.

Module:2	**Understanding current scenario and problem analysis with UI (All hand sketch)**	**10 hours**

1. Understanding the design principles (clear focus on application, minimum complexity, prioritize content)
2. Work structure &flow and hierarchy.
3. Layouts, fronts, composition, color, propositions.
4. Contrast window and Tagline differences.

Module:3	**Understanding Design Principles**	**10 hours**

1. Mental Model, Metaphors, Explicit and Implies Actions.
2. Direct Manipulation, User Control, Consistency.
3. Aesthetic Integrity.

Module:4	**Introduction to iPhone / IOS guides**	**10 hours**

1. Formatting content, Touch Controls, Hit Targets.

2. Text Size, Contrast, Spacing, High Resolution, Distortion.
3. Organization, Alignment.
4. Deference, Clarity, Use Depth to Communicate

Module:5	Introduction to OS X guides	10 hours

1. Basic designing OS X, App styles and Anatomy.
2. Starting and Stopping, Modality.
3. Interoperability, Feedback and Assistance, Interaction and input.
4. Animation, Branding, Color and Typography.
5. Icons and Graphics, Terminology and Wording.
6. Integrating with OS X.

Module:6	Introduction to Android guides	10 hours

1. Design metaphor
2. Material designing, Creative vision
3. Animation, style, Layout.
4. Components, Patterns, Usability.

Module:7	Introduction to Windows guides	10 hours

1. Controls, Messages, Visuals.
2. Commands, Interaction, Experiences.
3. Text, Windows, Environments

Module:8	Create an Existing Website For Desktop with UI Guides. (Paper sketch and wireframe) On given below Topics.	10 hours

1. Travel
2. Banking
3. Entertainments
4. Education
5. Government
6. Corporate

Module:9	Create an Existing Website For Mobile Computing with UI Guides. (Paper sketch and wireframe) On given below Topics.	10 hours

1. Travel
2. Banking
3. Entertainment
4. Education
5. Government
6. Corporate

Module:10	Choosing Area and Creating Own Website For Desktop with UI Guides (Choose any Three from given below).	10 hours

1. Travel

2. Entertainment		
3.Education		
4.Corporate		
Module:11	**Choosing Area and Creating Own Website For Mobile Computing with UI Guides (Choose any Three from given below).**	**10 hours**
1. Banking		
2. Entertainments		
3. Government		
4. Corporate		
Module: 12	**UI Portability to 'n' Devices.**	**10 hours**
	Total Laboratory hours:	**120 hours**

Text Book(s)

1.	Donald A.Norman, The design of everyday things, Currency Doubleday press, 2015

Reference Books

1.	Shneiderman, Ben, and Catherine Plaisant , "*Designing the User Interface: Strategies for Effective Human-Computer Interaction",*4th ed.Addison Wesley, 2014.

Mode of Evaluation: Assignment / FAT / Project

J Component Project (Samples)		
1.	Banking App	
2.	Education App	
3.	Entertainment App	
4.	Travel App	
5.	Corporate App	

Mode of evaluation: Reviews

Recommended by Board of Studies	12-06-2015		
Approved by Academic Council	NO : 37	DATE	16-06-2015

Course Code			L	T	P	J	C
MMA2007	**GAME DEVELOPMENT**		**0**	**0**	**8**	**4**	**5**
Pre-requisite	**MMA1005**		**Syllabus version**				

Course Objectives:

Course is aimed:
1. To Identify the fundamental concepts and key issues of the Game development discipline.
2. To gain knowledge to create game for various platforms.
3. To Articulate a clear and comprehensive game structure which is verified during game development.

Expected Course Outcome:

At the end of course, students should be able to,
1. Differentiate the tools and techniques involved in creating 2D & 3D games.
2. Identify and apply suitable methods to create games for various platforms.
3. Design and conduct experiments to address problems germane to the discipline.
4. Ability to understand current and future trends in gaming industry.
5. Integrate 2D & 3D assets in to Game Engines to publish Games.

Student Learning Outcomes (SLO):	**2, 12, 18**

[2] Having a clear understanding of the subject related concepts and of contemporary issues
[12] Having adaptive thinking and adaptability
[18] Having critical thinking and innovative skills

Module:1	**Essential concepts of Scripting**	**12 Hours**

1. Behaviors of game objects
2. Basic C# scripting
3. Introducing scripting in unity

Module:2	**Building Block of Scripts**	**14 hours**

1. Method instead of function
2. Introducing Classes
3. Passing values between the classes
4. Using objects and classes in game script

Module:3	**Details of Variables**	**15 hours**

1. Understanding component property in scripts
2. Displaying public variables in inspector panel
3. Multi-word variable names
4. Common – built – in variable types
5. Variable scopes

Module:4	**Methods' Properties**	**15 hours**

1. Using method in a script
2. Specifying methods parameters
3. Passing & Returning value from the method
4. Start () and Update () methods

Module:5	**Decision making in games**	**18 hours**

1. Condition testing using if statement
2. Usage of Foreach loop
3. Usage of while loop

4. Storing game objects in array
5. Storing game objects in list.
6. Using dot syntax in unity script
7. Accessing components own variables and methods
8. Accessing another game objects and its components.

Module:6	State Machine for the game	16 hours

1. Setting up the state manager controller
2. Modify the state manager
3. Adding OnGUI() to state manager
4. Creating a button to pause the game
5. Destroying and keeping the game objects of the scene

Module:7	Movement and Collision scripts	15 hours

1. Moving the players using rigid bodies
2. Creating and loading prefabs using scripts
3. Creating scores for winning the games
4. Creating player script.

Module:8	Player Scripts	15 hours

1. Firing a bullet in the game
2. Rapid firing the enemy
3. Player's animation trigger scripts
4. Controlling player movements through script.

	Total Laboratory hours:	120 hours

Text Book(s)

1.	Terry Norton, "Learning C# by Developing Games with Unity 3D Beginner's Guide", second edition, Packt Publishing Limited, 2015.

Reference Books

1.	Michelle menard, "Game development with unity" 2nd edition, Cengage Learning PTR, 2015.

Mode of Evaluation: Assignment / FAT / Project

J Component Project (Samples)			
1.	Tap The Bottle – Android Game		
2.	Seed – Android Game		
3.	Boo Hunt – PC Game		
4.	Tap to Survive – Android Game		
5.	Pirate Escape – PC Game		

Mode of evaluation: Reviews

Recommended by Board of Studies	12-06-2015		
Approved by Academic Council	NO: 37	DATE	16-06-2015

Course code			L	T	P	J	C
MMA2008		**UX DESIGN**	3	0	0	0	3
Pre-requisite	**MMA1006**			**Syllabus version**			

Course Objectives:

The course is aimed at:
1. Learning the User Experience.
2. Various components, Tools and methods of UX.
3. Design components in web and mobile applications.

Expected Course Outcome:

At the end of the course the student should be able to,
1. Understand User Experience and its process.
2. Understanding and meeting the required standard set of elements to find the need of customer sampling.
3. Creating design elements according to the target audience.
4. Justify archiving techniques according to user proforma.
5. Ability to line-up design principles on user comments.

Student Learning Outcomes (SLO):	2,15,18

[2] Having a clear understanding of the subject related concepts and of contemporary issues
[15] Having an ability to use the social media effectively for productive use
[18] Having critical thinking and innovative skills

Module:1	User experience and why it matters.	4 hours

1. Everyday Mysteries.
2. Introducing User Experience.
3. From product design to User Experience Design.
4. Designing for Experience.
5. Use Matters.
6. User Experience and the Web.
7. Good User Experience Is Good Business.

Module:2	Meet The Elements.	5 hours

1. The Five Planes.
2. Building from Bottom to Top.
3. A Basic Duality.
4. The Elements of User Experience.
5. Using the Elements.

Module:3	The strategy plane.	7 hours

1. Defining the strategy.
2. Product Objectives.
3. User Needs.
4. Team Roles and Process.

Module:4	The scope plane.	7 hours

1. Defining the Scope.
2. Functionality and Content.
3. Defining Requirements.
4. Functional Specifications.
5. Content Requirements.
6. Prioritizing Requirements.

Module:5	The structure plane.	6 hours
	1. Defining the Structure.	
	2. Interaction Design.	
	3. Information Architecture.	
	4. Team Roles and Process.	
Module:6	The skeleton plane.	7 hours
	1. Defining the Skeleton.	
	2. Convention and Metaphor.	
	3. Interface Design.	
	4. Information Design.	
	5. Wireframe.	
Module:7	The surface plane.	7 hours
	1. Defining the Surface.	
	2. Making Sense of the Senses.	
	3. Follow the Eye.	
	4. Contrast and Uniformity.	
	5. Internal and External Consistency.	
	6. Color Palettes and Typography.	
	7. Design Comps and Styles Guides.	
	8. The Elements Applied.	
	9. Asking the Right Questions.	
	10.The Marathon and the Sprint	
Module:8	Industrial expert will give her view in project as assigned and discussion over recent trend scenario in UX view. - Case Studies	2 hours
	Total Lecture hours: # Mode: Flipped Class Room, [Lecture to be videotaped], Use of physical and computer models to lecture, Visit to Industry, Min of 2 lectures by industry experts	45 hours

Text Book(s)	
1.	Jesse James Garrett, "THE ELEMENTS of USER EXPERIENCE", PHI, 2011.

Reference Books	
1.	Alan Cooper, Robar Riemann and Drave Cronin, About face 3, The essentials of interaction design, 1998

Mode of Evaluation: Assignment / Quiz/CAT/FAT			
Mode of evaluation: Reviews			
Recommended by Board of Studies	12-06-2015		
Approved by Academic Council	No. 37	Date	16-06-2015

Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

Course code			L	T	P	J	C
MMA3004	**ADVANCED 3D ANIMATION**		**0**	**0**	**8**	**4**	**5**
Pre-requisite	**MMA3002**		**Syllabus version**				

Course Objectives:

The course is aimed at:
1. Developing more sophisticated skills for character performance
2. Experimenting with both realistic and highly exaggerated styles of animation
3. Identifying professional practices and standards in animation industry, while creating Demo-reel.

Expected Course Outcome:

By the end of course, student should be able to:
1. Understand 3D animations' production pipeline by creating realistic and believable movements and emotions.
2. Strengthen animation skills by exploring methods for creating movements.
3. Analyze methods for creating solid acting choices that are unique and interesting.
4. Evaluating animations based on various principles of animation.
5. Create an independent animated project from start to completion in production standard.

Student Learning Outcomes (SLO):	**2,12,18**

[2] Having a clear understanding of the subject related concepts and of contemporary issues

[12] Having adaptive thinking and adaptability

[18] Having critical thinking and innovative skills

Module:1	**Analysing the cartoon and the modern era**	**15 hours**

- Sampling of great Mickey Mouse, Character and personality, construction, handling of mickey in animation.

Module:2	**Understanding and Creating Experiment on camera staging according to the storyboard.**	**15 hours**

- Understanding the staging techniques of camera setup character setup.
- Understanding the staging techniques of character setup and props, background.

Module:3	**Understanding and Creating different rough walk cycle on paper using humanoid 3d Character stylized walk.**	**10 hours**

- Understanding the stylized walk cycle techniques and drawing the smart scribbles for sketch segmentation thumbnail of the stylized walk cycle.
- Drawing the stylized walk cycle
- Finalizing stylized walk cycle concept.

Module:4	**Construction a story based concept action sequence involving humanoid 3d Character.**	**13 hours**

- Thinking of innovative ideas of the story building.

- Constructing the story with iteration before quality pass.
- Finalizing the story.
- Drawing the storyboard for finalized concept and finding adaptive 3D humanoid character.

Module:5	Key frame, Creating 3D layout according to the storyboard.	07 hours
- Creating the 3d layout based on storyboard.
- Creating the 3d character layout, camera layout according to the storyboard.
- Making iteration in keying on layout and finalization of the layout work in software.
- Making blocking and finalize the blocking for approval.

Module:6	Creating references for animation in method acting.	08 hours
- The task of acting it gets exact reference for their own story.
- Creating different kinds of acting and finalizing.
- Based the finalized act, student will proceed to 3d software animation

Module:7	Understanding the timing and mood of character.	05 hours
- Choosing the timing according to the story.
- According to story, presenting and creating the mood for the environment.

Module:8	Creating emotion	12 hours
- Action and reaction of the character.
- Feeling of the character.

Module:9	Key frame, Creating a blocking stage on humanoid 3d Character timing and acting sequence 1.	05 hours
- Based on story and the acting reference the block the humanoid 3d Character.
- Making iteration in keying on blocking stage and finalization.
- Making blocking poses and finalizes the blocking for approval.
- Creating the rough animation and in-betweens in blocking for approval.
- Finalizing the blocking based on story.

Module:10	Creating an intermediate stage for humanoid 3d character timing and acting sequence 2.	05 hours
- Making iteration in keying on blocking pass for more detail work of art.
- Making intermediate pass for smoother follow of action.
- Final output of the acting animation.

Module:11	Micro and Macro correction over finalized 3d animation for timing.	04 hours

- Appling principles according to the timing needs and for giving more detail attraction over the humanoid 3d Character.
- Quality passes for final output.
- Understanding and implementing the timing over character to show the mood.
- Creating facial expression on humanoid 3D Character.

Module:12	Creating lip sync on humanoid 3d Character.	05 hours

- Understanding the principle lip sync
- Shooting the lip sync action according to the own story, drawing the lip sync action to execute as lip sync expression.
- Implementing and transformation of action to humanoid 3d Character.
- Adding additional smooth pass (secondary action) for approval.
- Final rendered output of the acting animation.

Module:13	Creating an animated short story.	14 hours

- Quality passes on the final output.
- Redefining the change on the character animation.
- Final quality passes on the output of character animation.
- Render output.

	Total Laboratory hours:	120 hours	

Text Book(s)

1.	Frank Thomas and Odie Johnson, The Illusion of Life: Disney Animation, Disney Editions; Rev Sub edition, 2014

Reference Books

1.	Williams, R. The Animator's Survival Kit. Revised Edition, Faber & Faber, 2011

Mode of evaluation: Assignment /FAT

J Component Project (Samples)			
1	3D Realistic Action		
2	3D Realistic Acting		
3	Hyper Exaggerated Action shot		
4	Hyper Exaggerated Acting Shot		
5	Acting with props		

Mode of evaluation: Reviews

Recommended by Board of Studies	12.08.2017		
Approved by Academic Council	No. 47	Date	5.10.2017

Course code			L	T	P	J	C
MMA3005	**SCRIPTING AND STORYBOARDING TECHNIQUES**		0	0	8	4	5
Pre-requisite	**MMA2001**		**Syllabus version**				
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Course Objectives:

The course is aimed:

1. To provide a comprehensive introduction to scripting and storyboarding techniques.
2. To understand the basic techniques of writing script out of a story.
3. To understand the basic techniques of making storyboard out of a script.

Expected Course Outcome:

At the end of the course the student should be able to:

1. Understand the various techniques of writing a script and storyboard out of a given concept.
2. Acquire knowledge and idea about various types of script and storyboarding techniques.
3. Imply the gathered knowledge to write script and storyboard in the industry for animation and related areas.
4. Understanding and implementing the framing of story, script and character for short movie.
5. Ability to create industry standard portfolios.

Student Learning Outcomes (SLO):	**2,3,18.**

[2] Having a clear understanding of the subject related concepts and of contemporary issues.
[3] Having an ability to be socially intelligent with good SIQ (Social Intelligence Quotient) and EQ (Emotional Quotient).
[18] Having critical thinking and innovative skills.

Module:1	**Story writing concepts**	**12 hours**

1. Developing a story from a one liner or a concept
2. Understanding the story writing: anatomy of the story: beginning, middle and end
3. Write an original story out of an given basic idea(love, peace, tragedy etc)

Module:2	**Screenplay**	**12 hours**

1. Understanding screenplay, the anatomy and structure of a screenplay
2. Developing a screenplay from a given short story
3. Developing a screenplay with proper details out of the original story written by the student

Module:3	**Camera shots**	**16 hours**

1. Understanding camera angles: case study
2. Understanding camera shots: case study
3. Understanding camera transition: case study
4. Understanding scene transition: case study

Module:4	**Animation film screenplay**	**8 hours**

1. Develop a short animation film story with proper anatomy (beginning, middle, end)
2. Develop the screenplay for the animation film marking each scene description, time, shots, dialogue etc.

Module:5	**Advertisement film screenplay**	**8 hours**

1. Develop a basic concept and story for a 30 sec commercial advertisement of any selected product

	2. Develop the screenplay for the commercial advertisement marking each scene description, time, shots, dialogues etc.		
Module:6	**Documentary film screenplay**		**8 hours**
	1. Develop the idea and concept about the subject of the documentary film 2. Develop the basic screenplay for the documentary marking the scenes, camera angles, bgm etc.		
Module:7	**Storyboarding**		**12 hours**
	1. Understanding different storyboarding techniques 2. Develop storyboard in given module with details of camera angles and transitions **3.** Develop 20 panel storyboard out of any existing story or screenplay in pencil drawing		
Module:8	**Storyboarding from screenplay**		**16 hours**
	1. Develop the required storyboard in proper panels and in details from the screenplay made for animation 2. Develop the required storyboard in proper panels and in details from the screenplay made for commercial advertisement 3. Develop the required storyboard in proper panels and in details from the screenplay made for documentary film		
Module:9	**Three types of storyboarding(minimum 30 panels)**		**16 hours**
	1. Develop a basic storyboard with stick figures and rough drawings showing camera movements and transition 2. Develop a detailed storyboard in color with background and character details showing camera movements and transition 3. Develop a collage storyboard mainly used for commercial advertisement purpose		
Module:10	**Complete pipe line of pre-production**		**12 hours**
	1. Develop and get approved an idea for a short animation film/advertisement/documentary 2. Develop and get approved the story out of the idea for a short animation film/advertisement/documentary 3. Develop the detail storyboard from the story out of the idea for a short animation film/advertisement/documentary		
		Total Laboratory hours:	**120 hours**

Text Book(s)

1.	Vladimir Minuty and Stephanie Torta, Storyboarding: Turning Script to Motion (Digital Filmmaker Series), Mercury Learning & Information, 3rd edition, 2014.

Reference Books

1.	Giuseppe Cristiano, Storyboard Design Course: Principles, Practice, and Techniques, Barron's Educational Series, 2012.
2.	Mark Simon, Producing Independent 2D Character Animation: Making and Selling a Short Film, Focal Press, 2nd edition, 2012.

Mode of Evaluation: Assignment / FAT

J Component Project (Samples)		
1.	Developing the story from the given topic	
2.	One-liner story patent	

3.	Create a story sequence based on created story
4.	Creating character, props, background
5.	Creating storyboard based on the sequence and scenes
Mode of evaluation: Reviews	

Recommended by Board of Studies	12-06-2015		
Approved by Academic Council	No. 37	Date	16-06-2015

Course Code			L	T	P	J	C
MMA3006	**DIGITAL CINEMATOGRAPHY**		**0**	**0**	**6**	**4**	**4**
Pre-requisite	**MMA2004**		**Syllabus version**				

Course Objectives:

1. To understand the functional working of a video camera
2. To learn the Art of Film Making and its nuances.
3. To create a story and tell it convincingly to the audience using various techniques related to cinematography, editing and sound effects.

Expected Course Outcome:

At the end of the course the student should be able to

1. Operate a Video Camera, Video Lights and its related accessories.
2. Analyse and infer various conditions, preparations and environments for shooting a short film.
3. Appraise short films based on Shots, Continuity, Dialogue, Lighting, Audio and Effects.
4. Visualize concepts, ideas or a story based on a theme or a one-liner.
5. Plan the requirements (Story, Script, Storyboard) and complete a successful Documentary / Short Film.

Student Learning Outcomes (SLO):	**2,12,18**

[2] Having a clear understanding of the subject related concepts and of contemporary issues
[12] Having design thinking capability
[18] Having critical thinking and innovative skills

Module:1	**Basics of Video Camera**	**10 Hours**

Basics of video camera and how to handle it
Various Shooting modes in Video Camera and 3 Point Lighting using Video Lights
To Creating a Concept for a short film

Module:2	**Short Film - One Liner & Script**	**10 Hours**

Analyzing few examples of one liner
Writing an own one liner script.

Module:3	**Short Film - One liner:**	**10 Hours**

Writing a Story and characterization of the story.
Choose Character & Location Selection for Shooting in the VIT campus

Module:4	**Short Film - Dialogue & Story Development:**	**10 Hours**

Writing Dialogue for the story.
Create and segment Shot, Scene & sequence for the story.

Module:5	**Short Film - Screenplay & Storyboard**	**10 Hours**

Planning the storyboard
Preparing a storyboard for Video Shoot
Production Planning and will book the camera for his/ her shoot.

Module:6	**Short Film - Lighting & Camera Angle:**	**10 Hours**

Location Management
The student will submit the equipment list needed for his shoot.

The student will set the lighting and camera angle according to the shot and make a shooting script

Module:7	Short Film - Continuity & Acting:	10 Hours

Preparing cue sheet for the editing
Making note of information of their day one shoot and make sure they don't miss the continuity

Module:8	Short Film - Editing & Effect:	10 Hours

Capturing the rushes using cord and editing software
Finish of shooting and take the rushes to editing to sequence it and finalizing the real cuts.
Order the sequence according to the story and add effects, transitions, voice overs, subtitles and credit on his own creativity.

Module:9	Short Film - Output Submission	10 Hours

Render out the full short film.
Document the film in cd and submit it for screening.
Experts review the films and lectures.

	Total Laboratory Hours:	90 Hours

Text Book(s)

1.	Directing: Film Techniques & Aesthetics 5th Edition by Michael Rabiger and Mick Hurbis-Cherrier (Focal Press (2013)

Reference Books

1.	Cinematography: Theory & Practice: Image Making for Cinematographers and Directors 2nd Edition by Blain Brown (Focal Press – 2011)

Mode of Evaluation: Assignment / FAT

J Component Project (Sample)		
1.	Coming up with a Concept / One Liner	
2.	Developing a Story based on One Liner / Concept	
3.	Creating Script / Storyboard for the concept	
4.	Video Shoot of The Concept	
5.	Editing and Submitting the Final Output as a Short Film / Documentary	

Mode of evaluation: Reviews

Recommended by Board of Studies	12-06-2015		
Approved by Academic Council	No. 37	Date	16-06-2015

Course code			L	T	P	J	C
MMA3007		**RIGGING**	**0**	**0**	**8**	**4**	**5**
Pre-requisite	**MMA2001**		**Syllabus version**				

Course code			L	T	P	J	C
MMA3007		**RIGGING**	**0**	**0**	**8**	**4**	**5**
Pre-requisite	**MMA2001**		**Syllabus version**				

Course Objectives:

The course is aimed,

1. To study the organic and inorganic rigging of humans and machines.
2. To understand advanced techniques for organic rigs such as blend shape and facial expression setups.
3. To apply advanced techniques for complicated mechanical rigging setups by implementing dynamics in rigging.

Expected Course Outcome:

At the end of the course the student should be able to

1. Expand their basic rigging skills and understanding of tools and techniques related to rigging 3D models.
2. Understand and incorporate various industry-standard rigging techniques.
3. Justify advance techniques and methodologies of 3d character rigging.
4. Develop the understanding about skeletal rigging.
5. Ability to troubleshoot common rigging challenges.

Student Learning Outcomes (SLO):	**2,3,18**

[2] Having a clear understanding of the subject related concepts and of contemporary issues
[3] Having an ability to be socially intelligent with good SIQ (Social Intelligence Quotient) and EQ (Emotional Quotient)
[18]Having critical thinking and innovative skills.

Module:1	**Basic Bone and IK setup**	**15 hours**

1. Anatomy of a joint to create a skeleton form
2. Local rotation axes, parenting & un parenting the joints
3. Applying forward and inverse kinematics for a 3D character
4. Node functions of Hypergraph and outliner
5. Joint setup for a biped character.

Module:2	**3D Character Rig using FK/IK techniques**	**10 hours**

1. Creation of a biped character with full skeleton structure
2. Applying FK and IK for the character.
3. Applying Spline IK handle tool and cluster for biped character
4. Adding addition joints for detail deformation.

Module:3	**Linking Attributes of the character rig**	**15 hours**

1. Connecting objects using connection editor.
2. Attributes creation and connection using set driven key controls.
3. Joints animation using set driven key technique.
4. Point, Orient and Parent Constraints and its limitations in connecting the 3d objects.
5. Control curves for control the skeleton structure.

Module:4	**Biped Binding and Editing Skin weights**	**10 hours**

1. Reverse foot technique and pole vector for rigging the leg.
2. Mesh binding using smooth skinning and Interactive Binding methods.
3. Paint skin weights on the mesh for better skinning.
4. Skin weight editing and transfer using other tools.
5. Robot rigging techniques and binding methods.

Module:5	Advanced Rigging using MEL and Python scripts	15 hours

1. Stretchy IK and skeletal structures using MEL scripts.
2. IK/FK switch setup for rigging the hand in Maya.
3. Scripting joints and controls using MEL commands.
4. Creating and editing expressions for advance setup.

Module:6	Facial Rigging techniques	15 hours

1. Joint setup for facial Rigging.
2. Aim constraint for Eyeball movements in facial rig
3. Creating various expressions for facial setup. Expressions.
4. Creating lip-sync deformers for animation audio synchronization.
5. Editing skin
6. Blend deformer for merging the character facial
7. Weights tool using component editor.

Module:7	Rigging a Car with deformers and controls.	15 hours

1. Deformers for editing mesh shapes and structures.
2. Rigging a car by creating groups and Controls using driven keys
3. Lattice deformer for car tires deformation
4. Rigging properties using joint and constraints.

Module:8	Animal Rigging and skinning techniques.	10 hours

1. Quadruped skeleton character structure.
2. Quadruped skinning and editing skin weights-1
3. Quadruped skinning and editing skin weights-2
4. Creating control curves and constraints for quadruped rigging.
5. Creating an overall control curve for the character rig.

Module:9	Designing Custom Rigs using animation.	15 hours

1. Muscle setup and deformation using Muscle deformer.
2. Creating and editing character set for rigging
3. Character References for rigs to optimize animation and scene
4. Rigging a snake using the spline IK and constraints.
5. Exporting and importing character rigs for external applications.
6. A full body character control rig with all controls

Total Lecture hours:	120 hours

Text Book(s)

1.	Tina O'Hailey, "Rig it Right! Maya Animation Rigging Concepts", 1st edition, Focal Press, 2013.

Reference Books:

1.	Todd Palamar, "Mastering Autodesk Maya 2016", 1st edition, sybex, 2015.
2.	

	David Rodriguez, "Animation Methods - Rigging Made Easy: Rig your first 3D Character in Maya" 1st edition, CreateSpace, 2013.		

Mode of Evaluation: Assignment / FAT	

J Component Project (Samples)			
1.	Biped Rigging – Batman		
2.	Biped Rigging – Sam		
3.	Biped Rigging – Spidey		
4.	Mechanical Rigging – Cartoon Car		
5.	Mechanical Rigging – Sports Car		

Mode of evaluation: Reviews			
Recommended by Board of Studies	12.8.2017		
Approved by Academic Council	No. 47	Date	5.10.2017

Course code			L	T	P	J	C
MMA3008		**ADVANCED MODELING**	0	0	8	4	5
Pre-requisite	**MMA3001**		**Syllabus version**				

Course Objectives:

The course is aimed
1. To gain good knowledge to create organic modeling.
2. To apply experimental production techniques for organic modelling.
3. To explore the advanced techniques in polygon based Modeling.

Expected Course Outcome:

At the end of the course the student should be able to
1. Create a model of their own and texture it appropriately.
2. Generate character models with proper topology and anatomy.
3. Create set models with proper measurements based on real world scaling.
4. Differentiate the pros & cons of triangulating polygons.
5. Develop detailed shaders with available shading network.

Student Learning Outcomes (SLO):	2,3,18

[2] Having a clear understanding of the subject related concepts and of contemporary issues
[3]Having an ability to be socially intelligent with good SIQ (Social Intelligence Quotient) and EQ (Emotional Quotient)
[18] Having critical thinking and innovative skills.

Module:1	Introduction	15 hours

1. Review of the Maya GUI.
2. Review fundamental Modeling techniques.
3. Modeling a human hand.
4. Adding detail to the hand model.
5. Creating skin texture in image editing software.

Module:2	Modeling with NURBS	10 hours

1. NURBS components (Control Vertices, Hulls, Spans/Sections, Curve Degree, Edit Points, U and V coordinates).
2. Curve-based Modeling concepts and techniques.

Module:3	Modeling with polygons	15 hours

1. Setting up a scene for modeling.
2. T-pose vs. Relaxed Pose.
3. Image planes.
4. Mesh topology.
5. Quad's (4-sided) vs. Tri's (3-sided) vs. multi-sided faces.
6. Complicated meshes and Boolean Modeling operations.

Module:4	Modeling and Texturing a Character with NURBS.	15 hours

1. NURBS Topology.
2. Modeling with Profile Curves.
3. Tools and Methods.

4. Designing and Modeling a Character with NURBS.		
Module:5	**Modeling cleanup**	**10 hours**
1. NURBS to polygon conversion 2. Polygon Cleanup. 3. Naming conventions, parenting, hierarchies, and naming conventions.		
Module:6	**Modeling & Texturing a Simple Character with Polygons**	**15 hours**
1. Modeling with Polygon Tools. 2. Working with Symmetry. 3. Using Image Planes and Block Modeling. 4. Sculpting the Character. 5. UV Texturing.		
Module:7	**UV unwrapping and texturing**	**15 hours**
1. UV Coordinates. 2. UV Projections and unwrapping. 3. NURBS vs. polygon UV coordinate space. 4. Exporting UV snapshots to Photoshop. 5. Materials Fundamentals.		
Module:8	**Materials and texturing**	**10 hours**
1. Materials and Shaders. 2. Hypershade. 3. Standard shading attributes. 4. Bump maps, normal maps, and displacement maps. 5. Procedural vs. image-based texture nodes. 6. Layered and specialty shaders.		
Module:9	**Designing a Humanoid and Modeling the Head**	**15 hours**
1. Human Anatomy for Modelers. 2. Using Distortions for Artistic Purposes. 3. Methods and Tools. 4. Blocking the Torso and Limbs. 5. Shaping and Refining the Torso and Limbs. 6. Testing Geometry Deformation. 7. UV Mapping. 8. Bump maps, normal maps, and displacement maps. 9. Creating texture using image editing software.		
	Total Laboratory hours:	**120 hours**
Text Book(s)		
1.	Autodesk Maya Press, "Learning Autodesk Maya 2016: Foundation", John Wiley & Sons, 2015	
Reference Books		
1.	Todd Palamar, "Mastering Autodesk Maya 2016", 1st edition, sybex, 2015.	
Mode of Evaluation: Assignment / FAT		
J Component Project (Samples)		

1.	Ancient Characters for game			
2.	Sci-fi Characters for game			
3.	Creature modeling – Concepts			
4.	Historical Environment - Assets			
5.	Sci-fi City – Assets			
Mode of evaluation: Reviews				
Recommended by Board of Studies	12.8.2017			
Approved by Academic Council	No. 47	Date	5.10.2017	

Course code			L	T	P	J	C
MMA3009		**ADVANCED FILM MAKING**	**0**	**0**	**8**	**4**	**5**
Pre-requisite	**MMA3006**		**Syllabus version**				
			v. xx.xx				

Course Objectives:

1.To learn the Art of Professional Film Making

2.To learn and understand the Art of Storytelling through Visuals and Acting.

3.To learn the handling of Professional Videography Equipments for Film Making.

Expected Course Outcome:

At the end of the course the student should be able to,

1. Operate Professional Video Camera, Cine Lenses and its related accessories along with Color Grading.
2. Analyse the Cast, Crew requirements along with various preparations and environments for shooting a professional short film.
3. Appraise short films based on Emotion, Psychology, Acting, Performance and Culture.
4. Visualize concepts, ideas or a story based on a theme or a one-liner.
5. Developing a plan for a feature film/Documentary/Shortfilm

Student Learning Outcomes (SLO):	**2,12,18**

[2] Having a clear understanding of the subject related concepts and of contemporary issues

[12] Having design thinking capability

[18] Having critical thinking and innovative skills

Module:1	**Basics of Video Camera**	**12 Hours**

Basics of Film Camera; Film Camera Handling; Setting ISO for various Shots; Setting Iris (Aperture) for various Shots; Setting Shutter Speed for various Shots; Setting White & Black Balance for various Shots; Steady-Cam Rig Operation; Slider Operation; Handling CP2 Lenses; Fixing the Video Camera in the Shoulder Rig; Fixing and handling the Follow Focus System; Fixing the Matte Box and LCD Display; Various Film Recording Formats; Using a Track and Trolley

Module:2	**Concept and Budget**	**10 Hours**

Concept or Idea Generation; Writing a Documentary ;Budgeting for a Short Film

Module:3	**Script:**	**10 Hours**

Professional Script Writing; Writing an Effective Screenplay; Production Logs and its Types; Choosing the Various Video Filters; Color Correction & Color Grading

Module:4	**Storyboard:**	**10 Hours**

Storyboarding for Film; Characterization; Crew & Casting; Production Planning

Module:5	**Dialogue:**	**10 Hours**

Dialogue Writing; Continuity and Hook Up; Shooting Script

Module:6	**Acting:**	**10 Hours**

Location Management; Costume for Actors; Dubbing & Voice Over; Foley and Special Effects; Body language for Actors (rehersals); Dialogue Delivery

Module:7	Composition:		10 Hours
Properties & Asset Management; Background Music for the Film; Sound Effects for Film			
Module:8	Lighting:		10 Hours
Location Lighting and Light Continuity; Lighting for various Mood.			
Module:9	Editing		10 Hours
Capturing the rushes using cord and editing software			
Finish of shooting and take the rushes to editing to sequence it and finalizing the real cuts.			
Visual Effects			
Order the sequence according to the story and add effects, transitions, voice overs, subtitles and credit on his own creativity.			
Module:10	Final Presentation:		10 Hours
Film Distribution			
	Total Laboratory Hours:		120 Hours

Text Book(s)

1.	Directing: Film Techniques & Aesthetics 5th Edition by Michael Rabiger and Mick Hurbis-Cherrier (Focal Press (2013)

Reference Books

1.	Cinematography: Theory & Practice: Image Making for Cinematographers and Directors 2nd Edition by Blain Brown (Focal Press – 2011)

Mode of Evaluation: Assignment / FAT

J Component Project (Sample)			
1.	Handling Film Camera, Cine lenses and Cine Equipments.		
2.	Developing a Story based on One Liner / Concept		
3.	Creating Script / Storyboard for the concept along with Dialogue, Continuity, Prop & Assets		
4.	Video Shoot of The Concept based on Storyboard		
5.	Editing and Submitting the Final Output as a Short Film / Documentary		
Mode of evaluation: Reviews			

Recommended by Board of Studies	12-06-2015		
Approved by Academic Council	No. 37	Date	16-06-2015

Course code		L	T	P	J	C
MMA3010	**VIDEO EDITING & DIGITAL INTERMEDIATE**	**0**	**0**	**8**	**4**	**5**
Pre-requisite	**MMA3006**	**Syllabus version**				

Course Objectives:

The course is aimed :
1. To understand the developing process of making movies.
2. To Acquire the knowledge of basic storyboarding to prepare for a movie using editing software
3. To practice the categories in compositing process.

Expected Course Outcome:

At the end of the course student should be able to :
1. Understand on the latest techniques in editing.
2. Analyze the stages of Pre-production, Production and Post-Production of editing techniques.
3. Develop the method to visualize and create their own video logs and short-films.
4. Understand the fundamental terminologies and concepts of Non-Linear editing.
5. Develop an understanding of the basics of camera technology, sound, microphones, shooting techniques necessary to understand the editing process

Student Learning Outcomes (SLO):	2, 8, 20

[2] Having a clear understanding of the subject related concepts and of contemporary issues.
[8] Having Virtual Collaborating ability.
[20] Having a good digital footprint.

Module:1	Editing Software	15 hours

1. Understanding the interface video editing software.
2. Creating a new project and importing video footage into the bin and labelling them.
3. Setting up a mark in & mark out in source monitor and inserting the video into timeline.

Module:2	Cut to Cut	15 hours

1. Applying the techniques of cut to cut and cutaway.
2. Applying the techniques of jump cut.
3. Creating a match cut for the video footage.

Module:3	Audio Editing	15 hours

1. Recording audio formats.
2. Editing recorded audio using audio editing software.
3. Adding audio effects to the clips to sync with the video files.
4. Creating an audio sync using audio transitions method.

Module:4	Special Effects	15 hours

1. Applying special effects to the video clips placed on the timeline.
2. Creating special transitions to the video clips placed on the timeline.
3. Adding title to the desired video clip.

Module:5	Titling	15 hours

 1. Creating titling animation for a Trailer.

2. Creating titling animation for a Video Song.
3. Creating a complete video song with lyrics.
4. Creating a start & end titles /credits title for a short-film.

Module:6	Advanced Titling	15 hours

1. Titling - Rolling
2. Titling - Crawling
3. Slip Edit Trimming
4. Slide Edit Trimming

Module:7	Animation	10 hours

1. Animation - Speed Duration
2. Animation - Setting keys for animation
3. Animation - Multiple Techniques

Module:8	Video Transitions	10 hours

1. Transitions - Working on Zoom & Dissolve Transition
2. Transitions - Working on Page Peel & Slide Transition
3. Transitions - Working on Stretch & Wipe Transition

Module:9	Video Effects	10 hours

1. Chroma Key - Editing a green/blue matte video footage with key effects.
2. Creating different effects to video clips using distort effects
3. Altering color correction and grading to video clips based on the scene.

	Total laboratory hours:	120 hours

Text Book(s)

1.	Andrew Faulkner, "Adobe Premiere Pro CC Classroom", 1st edition, Adobe Press, 2017.

Reference Books

1.	Aaron Goold, "The Video Editing Handbook",1st edition, Independently published, 2017

Mode of Evaluation: Assignment / FAT

J Component Project (Samples)		
1.	Short Film Project	
2.	Documentary Project	
3.	Promotion & Ad Film project	
4.	Title effects Project	
5.	Creative editing project	

Mode of evaluation: Reviews			
Recommended by Board of Studies	12.6.2015		
Approved by Academic Council	No. 37	Date	16.6.2015

Course code			L	T	P	J	C
MMA3011	**ADVANCED COMPOSITING & DYNAMICS**		**0**	**0**	**8**	**4**	**5**
Pre-requisite	MMA3003			**Syllabus version**			

Course Objectives:

The Course is aimed :

1. To focus on efficiency of workflow, troubleshooting skills, and maintaining the image quality.
2. To comprehend advanced keying techniques, color space and 3D tracking.
3. To learn the Advanced compositing using Node based software.

Expected Course Outcome:

At the end of the course student should be able to :

1. Create an effective digital media portfolio project.
2. Combine digital effects and elements' towards visual believability
   and consistency.
3. Identify major applications of compositing process used in industry.
4. Ability to improve workflow and solve advanced compositing challenges.
5. Developing an effective 3D Compositing pipeline.

Student Learning Outcomes (SLO):	**2,12,18**

[2] Having a clear understanding of the subject related concepts and of contemporary issues
[12] Having adaptive thinking and adaptability
[18] Having critical thinking and innovative skills

Module:1	**Working with Nodes**	**15 hours**

1. Adding and editing nodes.
2. Loading images in to the scene.
3. Transformations and editing footage settings
4. Building node trees and making connections
5. Merging the nodes to the viewer and editing viewer properties

Module:2	**Color Correction and Grading:**	**15 hours**

1. Basic Color correction for the footages.
2. Color grading using Grade node.

Module:3	**Tracking & Stabilization:**	**15 hours**

1. Tracking: Tracking preferences and viewer tools
2. Stabilization using transform, Rotation & Scaling.
3. Automatic versus Manual Tracking
4. Corner pin 2D for Match moving
5. Transforming masks with tracking data
6. To analyze and fix the jitter in the video

Module:4	**Rotoscopy and wire removal**	**15 hours**

1. Creating Roto for the image and for the video
2. Working with channels and RGB
3. Working with Stroke and shape list
4. Curve editor and Dope sheet for animation

Module:5	**Matte Removal:**	**15 hours**

1. Keying techniques – with Keylight

  2. Keying techniques- with Primatte
  3. Keying techniques- with ultimate

Module:6	Stereoscopic Effect:	15 hours

1. Loading multiple views in to the scene
2. Splitting and merging of footages in the scene
3. Usage of Anaglyph to create stereoscopic effect
4. Shuffle views, join views and fixing the views
5. Rendering the stereoscopic scene

Module:7	3D Compositing:	10 hours

1. Setting up a 3D scene
2. Using 3D viewer
3. Setting up the 3D geometry for 3D compositing
4. Applying texture and materials for the geometry
5. Creation of custom camera and light settings in the scene

Module:8	Live Action Compositing:	10 hours

1. 3D Set Extension using compositing
3. Wire removal using the video footage
4. Matte removal using the keying techniques
5. Integration of 3rd party 3D tools for advance compositing.

Module:9	Particles & Python Scripting:	10 hours

1. Gizmos and basic python expressions 2. Customizing the nodes using python scripts 3. Creating custom panels and advance compositing 4. Creating particles using emitter 5. Properties of particles and effects in Python 6. Effects: Wind, Turbulence, Gravity 7. Particle direction and bounce on the surface 8. Expressions to change the flow of particles 9. Compositing the particles over the footage

	Total laboratory hours:	120 hours

Text Book(s)

1.	Lee Lanier, "Digital Compositing with Nuke", 1st edition, Focal Press, 2015.

Reference Books

1.	Steve Wright, "Digital Compositing for Film and Video: Production Workflows and Techniques", 4th Edition, Routledge press, November 28, 2017

Mode of Evaluation: Assignment / FAT

J Component Project (Samples)

1.	3D Match Move project		
2.	Compositing Show reel		
3.	Retouch / Prep / Wire removal project		
4.	Rotoscopy project		
5.	Live action with 3D background project		

Mode of evaluation: Reviews

Recommended by Board of Studies	12.6.2015		
Approved by Academic Council	No. 37	Date	16.6.2015

Course code			L	T	P	J	C
MMA3012	**ARTIFICIAL INTELLIGENCE FOR GAMES**		3	0	0	0	3
Pre-requisite	**MMA2007**		**Syllabus version**				

Course Objectives:

    This course is aimed:
1. To familiarize students with techniques and issues of Artificial Intelligence (AI) for computer games
2. To discuss the nature of path-finding in video games.
3. To demonstrate the application of physics in game environment towards achieving realism.

Expected Course Outcome:

By the end of the course, students should be able to:

1. Identify aspects of computer games, which benefit from artificial intelligence.
2. Implement artificial intelligence and machine learning techniques for traditional and modern computer games.
3. Define the importance of physics and collision in game creation.
4. Create custom navigation using path-finding algorithms.
5. Demonstrate their skills in handling game engines for AI tasks.

Student Learning Outcomes (SLO):	3, 9, 12

[3] Having an ability to be socially intelligent with good SIQ (Social Intelligence Quotient) and EQ (Emotional Quotient)
[9] Having problem solving ability- solving social   issues and engineering problems.
[12] Having adaptive thinking and adaptability

Module:1	AI And Games	7 hours

Game AI, Model of Game AI, Algorithms, Data Structures and Representations, Kinds OF AI in Games, Speed and Memory-Processor issues, Memory concerns, PC & console constraints, The AI Engine-Structure of AI Engine, Tool chain concerns.

Module:2	Motor Control & Movements	5 hours

Basics of Movement Algorithm – Two dimensional movement, Statics, Kinematics, Steering Behaviors – Variable matching

Module:3	Physics and Collisions	5 hours

Path following, Collision avoidance, Predicting physics, Jumping & Motor Control, Movement in 3rd Dimension.

Module:4	Path Finding	6 hours

Graphs, Weighted Graphs, Cost functions, Path smoothing, Open Goal pathfinding, Dynamic pathfinding, Continuous time pathfinding, Movement Planning

Module:5	Trees and algorithms:	6 hours

Decision Trees – Problem- algorithm - Pseudo code - Implementation, State Machines, Behavior trees – Fuzzy Logic, Markov Systems.

Module:6	Decision Making	7 hours
	Goal Oriented, Rule based systems, Scripting, Board Game Theory, Minimaxing, Transposition tables and memory, Turn based strategy in board games.	

Module:7	Designing AI:	7 hours
	Scheduling execution. Level Of Detail, The Design, Shooters, Driving, Real-Time strategy, Sports, Turn based strategy games, AI Based Game Genres.	

Module:8	Expert talk on recent advancements in Games & Artificial intelligence	2 hours

	Total Lecture hours: # Mode: Flipped Class Room, [Lecture to be videotaped], Use of physical and computer models to lecture, Visit to Industry, Min of 2 lectures by industry experts	45 hours

Text Book(s)

1.	1. Ian Millington and Morgan Kaufmann, "Artificial Intelligence for Games", 2nd edition, Taylor & Francis, 2012.

Reference Books

1.	1. Jeff Heaton, "Artificial Intelligence for Humans, Fundamental Algorithms", 1 edition, CreateSpace Independent Publishing Platform, 2013.
	Mode of Evaluation: CAT/Assignment/Quiz/FAT

Recommended by Board of Studies	12.6.2015		
Approved by Academic Council	No. 37	Date	16.6.2015

Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

Course Code			L	T	P	J	C
MMA3013	**ARCHITECTURAL VISUALIZATION**		**0**	**0**	**8**	**4**	**5**
Pre-requisite	**MMA1003**		**Syllabus version**				

Course Objectives:

Course is aimed at:

1. Gaining basic concepts and understanding of tools related to 3D production.

2. Become comfortable with basics of modeling, lighting, texturing and rendering.

3. Understanding the fundamentals of strong 3D design.

Expected Course Outcome:

At the end of the course, students should be able to:

1. Create a 3D architectural model and site model of moderate complexity.
2. Develop and apply realistic textures to a 3D model.
3. Ability to use both natural and artificial lighting techniques.
4. Demonstrate a working understanding of image editing and post production tools used in the architectural visualization industry.
5. Acquiring an intermediate level of skill in the use of 3D modeling, rendering, animation and post production applications.

Student Learning Outcomes (SLO): | **12, 18, 20**

[12] Having adaptive thinking and adaptability
[18] Having critical thinking and innovative skills
[20] Having a good digital footprint

Module:1	Introduction to work area	15 Hours

1. User interface, user interface components.
2. Viewports, viewports configuration.
3. Working in the user interface.
4. Creating objects, quad menu.
5. Aligning objects, reference coordinate system.

Module:2	Shapes and Editable Poly	15 hours

1. Creating shapes, editable splines.
2. Working with extrude modifier, taper modifier, lathe modifier.

Module:3	Creating the plane, Compound objects, Material	15 hours

1. Creating the plan, Boolean compound object.
2. Working with pro Boolean, terrain.
3. Using the scatter compound object, loft compound object.
4. Working with deformations, deform scale, shape merge.
5. Types of materials, shaders, naming materials.
6. UVW map modifier, applying architectural material.

Module:4	Sketch Exercise 1 (Exterior)	15 hours

1. Solid Modeling, Extrusions and Booleans

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2. Mesh Modeling, Thicknesses and 3D Faces
3. Creating 3D blocks for Windows and Doors
4. Path Extrusions

Module:5	Importing AutoCAD to 3D Software	15 hours

1. Legacy Import.
2. Viewports and Creating Cameras.
3. Basic Rendering.

Module:6	Lighting and Exposure Control in 3D Software	12 hours

1. Creating Standard Lights.
2. Rendering Environment.
3. Rendering Background.
4. Daylighting System in 3D Software Design.
5. Exposure Control.

Module:7	Materials in 3D Software	11 hours

1. Material Types.
2. Material Editor (compact mode).
3. Material Parameters.
4. Applying materials from Libraries.
5. Creating custom Standard Materials.
6. Object Mapping Coordinates.
7. Bitmap Bump Mapping.
8. Procedural mapping.
9. Transparent and Reflective Materials.

Module:8	Test Rendering and Network Rendering	10 hours

1. Rendering Engine Options
2. Rendering Regions and Selected Objects
3. Mental Ray Indirect Illumination Parameters
4. Saving and Reusing Final Gather.
5. Generating Photon Maps

Module:9	Completion and Interior Lighting	12 hours

1. Enclosing teh Model to Avoid Light Leaks.
2. Utilizing Clipping Planes in with Cameras.
3. Importing or Merging Furniture.
4. Exterior Daylighting with Mental Ray Sky Portals
5. Interior Photometric Lights.

	Total Laboratory hours:	120 hours

Text Book(s)

1.	Roger Cusson and Jamie Cardoso, "Realistic Architectural Visualization with 3ds Max and mental ray", Second Edition, 2015

Reference Books

1.	Brian L. Smith, "3ds Max 2008 Architectural Visualization: Beginner to Intermediate", 3rd edition, 2015		
Mode of Evaluation: Assignment / FAT / Project			
J Component Project (Samples)			
1.	Interior Modeling		
2.	Exterior Modeling		
3.	Shading & Texturing		
4.	Interior & Exterior Walkthrough		
5.	Rendered Architectural Visualization		
Mode of evaluation: Reviews			
Recommended by Board of Studies	12-06-2015		
Approved by Academic Council	NO: 37	DATE	16-06-2015

VIRTUAL REALITY		**L**	**T**	**P**	**J**	**C**
MMA2009		**3**	**0**	**2**	**0**	**4**
Pre-requisite	**MMA1003 – Design Fundamentals**	**Syllabus version**				
		V. 1.0				

Course Objectives:

This course is aimed:
1. To enable students to understand nuances of Virtual Reality.
2. To facilitate students to get well versed with varied applications of Virtual Reality.
3. To create virtual environments, applications and games.

Expected Course Outcome:

At the end of this course, the students will be able:
1. To identify the appropriate policies and procedures of VR for optimal use, apply industry standards and best practice.
2. To discuss the various pros & cons of existing VR/AR technology.
3. To analyze and choose the appropriate VR implementation methodology based on the nature of the project.
4. To create new applications with VR/AR technology.
5. To apply knowledge and skills in creative ways to new situations in professional practice and/or further learning in the field of VR/AR.

Student Learning Outcomes (SLO): 2, 8, 18

[2] Having a clear understanding of the subject related concepts and of contemporary issues.

[8] Having Virtual Collaborating ability.

[18] Having critical thinking and innovative skills.

Module:1	**INTRODUCTION TO VIRTUAL REALITY**	**5 hours**

Definition and introduction – 3D animation and Augmented reality – Four Key Elements - Input devices – Output devices - Immersive and Non-Immersive Virtual Reality - Advantages & Disadvantages.

Module:2	**VR INTERACTION**	**6 hours**

Human Factors in VR-Methodology and Terminology-User Monitoring – Degrees of Freedom (DOF) - User Performance Studies-VR health and Safety Issues-VR and Society- Human-Computer Interaction – VR in psychology.

Module:3	**INTERFACE TO THE VIRTUAL WORLD**	**5 hours**

Glossary of VR terminology – Visual Displays - Head Mounts Display (HMD), Boom, Cave, Input Devices and Sensual Technology - Characteristic of Immersive VR Shared Virtual Environments

Module:4	**VR HARDWARE & INTEGRATION**	**6 hours**

Key Interactions: Manipulation, Navigation, and Communication - Trends in VR Hardware – Existing Hardware Technologies - Adaptability with Mobile devices-Visualization technology-VR with 3D-VR with Anaglyph

Module:5	**VR IN BUSINESS**	**7 hours**

VR for Everyone - Mainstream VR Business-Adoption in Gaming Industry-Entertainment-Sports- Feature Films-Retail-Social media-education.

Module:6	VR VIDEOS AND STREAMING APPLICATIONS	7 hours

Virtual surround sound-360 degree cameras-editing 360 videos-streaming- Virtual Reality Applications-Applications of Virtual Reality – Gesture Recognition -Education &training – Entertainment – Medical applications.

Module:7	VR AUTHORING	7 hours

Computational Fluid Dynamics (CFD) –Games– Virtual sets Costing – Virtual Reality Markup Language – Computing architecture for VR - Past, present & future of VR.

Module:8	FUTURE ADOPTATIONS OF VR/AR	2 hours

Emerging Fields in VR/AR –Industry Expert Talk

	Total Lecture hours:	45 hours

Text Book(s)

1. William R Sherman, Alan B Cranig, Understanding Virtual Reality Interface, Application and Design, Morgan Kaufmann Publishers, 2018.

Reference Books

1. Virtual Reality: Advances in Research & Applications by Zachary Hill, 2016.

2. VIRTUAL REALITY: How to Experience and Create Amazing VR Content by Mauricio Dela Orta, 2016.

3. Learning Virtual Reality: Developing Immersive Experiences and Applications by Tony Parisi, 2015.

Mode of Evaluation: Digital Assignments, Quiz, Continuous Assessments, Final Assessment Test

List of Challenging Experiments (Indicative)		

1. Creating Virtual Environment
2. Interactive VR for Head Mount Displays (HMDs)
3. Building a VR Game
4. Building VR APK & Testing
5. Immersive 360 degree view

Mode of Evaluation: Assessments/FAT

Recommended by Board of Studies	11-09-2018		
Approved by Academic Council	No. 52	Date	14-09-2018