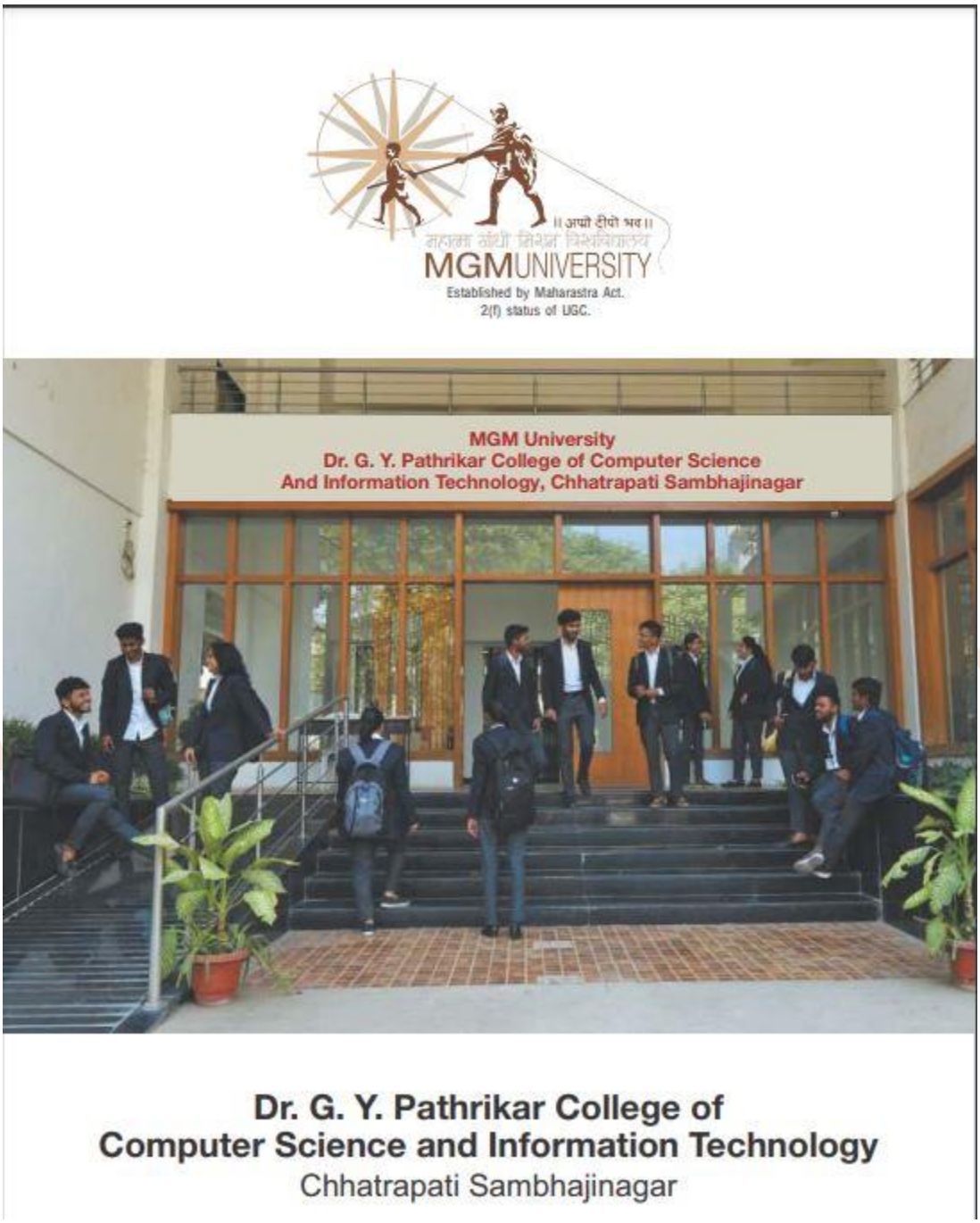

B.Sc. (Hons. /Hons. with Research) Animation: First, Second , Third and Fourth Year (Syllabus)

MGM University

Vision

- To ensure sustainable human development which encourages self-reliant and self-content society.
- To promote activities related to community services, social welfare and also Indian heritage and culture.
- To inculcate the culture of non-violence and truthfulness through vipassanna meditation and Gandhian Philosophy.
- To develop the culture of simple living and high thinking

Mission

- To impart state of art education and technical expertise to students and give necessary training to teachers to create self-reliant society for future.
- To encourage students to participate in Indian and International activities in sports, literature, etc. so that future generation becomes base for free and liberal society
- To educate students in areas like Management, Finance, Human relations to inculcate philosophy of simple living and high thinking value of simple economic society.
- To inculcate culture of non-violence and truthfulness through Vipassana.

  To sustain activities of Indian culture (viz. classical dance, music and fine arts) through establishing institutes like Mahagami, Naturopathy, etc.

विद्यापीठ गीत

अत्त दिप भव भव प्रदिप भव,

स्वरूप रूप भव हो

ज्ञान सब्ब विज्ञान सब्ब भव ,

सब्ब दिप भव हो

अत्ताहि अत्त नो नाथो ,

अत्ताहि अत्त नो गति

अत्त मार्गपर अप्रमादसे है तुझे चलना

सब्ब का कल्याण हो ,

वो कार्यकुशल करना

सब्ब का उत्तम मंगल , पथप्रदर्शक हो

अत्त दिप भव भव प्रदिप भव ,

स्वरूप रूप भव हो

ज्ञान सब्ब विज्ञान सब्ब भव ,

सब्ब दिप भव हो

बुद्धमं शरनं गच्छामि :

धम्मं शरनं गच्छामि :

संघं शरनं गच्छामि :

Dr. G. Y. Pathrikar College of Computer Science & Information Technology

MGM college of Computer Science and Information Technology was established in 2001 offering undergraduate and postgraduate degree program in Computer Science and Information Technology. College was renamed as Dr.G.Y.Pathrikar College of Computer Science and Information Technology in 2003 in memory of great educationalist, one of the founder member and Ex-Secretary MGM, Dr.G.Y.Pathrikar Sir.

It is first self-financed ISO certified institution offering program dedicated to Computer science and Information technology in Maharashtra and has achieved status of 2f/12b. Ours was the only and first college to be re-accredited as A+ grade with NAAC in the year 2017. Experienced and qualified faculty with Ph.D is strength of our college. Starting with 77 student's College has crossed total students strength of 10,000 passing out. Student are doing well in various MNCs like Infosys, Tech-Mahindra, Wipro, Capgemini, Cognizant etc. Many have their own Startups. Some of the students have completed their Masters and Ph.D. program from foreign countries like US, UK, Australia. Now we are constituent college of MGM University, Chhatrapati Sambhajinagar.

Vision

To be an academic institution in dynamic equilibrium in social, ecological and economical environment striving continuously for excellence in total quality education, research and technological service to the nation.

Mission

- To create and sustain a community of learning in which students acquire knowledge and learn to apply it professionally with due consideration for ethical, and economical issues.
- To upgrade our students in all respect with the help of latest infrastructure in the area of Computer Science and Information Technology in order to build the National Capabilities.
- To understand the culture of Non-violance, truth, peace through Gandhian Philosophy.

Programs offered at Dr. G. Y. Pathrikar College of Computer Science & Information Technology

Undergraduate Programmes	Postgraduate Programmes	PhD Programmes
B.Sc(Computer Science) Honours / Honours with Research	M.Sc(Computer Science)	Ph.D. in Computer Science and Information Technology
B.Sc(Information Technology) Honours/ Honours with Research	M.Sc(Information Technology)	
BCA(Science) Honours / Honours with Research	M.Sc(Data Science)	
B.Sc(Animation) Honours / Honours with Research	M.Sc(Animation)	
Integrated M.Sc. Data Science		
BCA(Digital Marketing) Honours		
B.Sc(Robotics) Honours		

Name of Program – B.Sc. (Animation) Honours / Honours with Research

Duration – Four Years

Eligibility -

- He / She Must have passed the Higher Secondary (Multipurpose) Examination conducted by H.S.C. Board Government of Maharashtra with Science / Technical Subjects or an Examination of any statutory University and Board recognized as equivalent thereto.

OR

- Candidates having offered prescribed vocational courses, (MCVC) with Computer Techniques / Information Technology / Electronics.

OR

- Three Years Course in Diploma Engineering conducted by the Board of Technical Education, Maharashtra State. He / She must have passed at qualifying examination.

Name of Faculty: Basic and Applied Science

Name of the College/Institute/Department/School: Dr. G. Y. Pathrikar College of Computer Science and Information Technology

Name of the Programme: B.Sc. (Animation) Honours / Honours with Research

Programme Type (UG/PG): UG

Duration: Four Years

List of Options to select from Bucket of Courses provided in various categories:

Major	
Animation	
Core Major	Core Elective

Minor options for basic and applied science Faculty	GYP	IBT	UDBAS
	Cyber Security	Food Technology and Processing	Chemistry
	Robotics	Microbiology	Geo-Informatics
	Data Analytics	Biotechnology	Mathematics
	Block-Chain Technologies	Bioinformatics	Statistics
		Food Nutrition and Dietetics	Material Science

First Year- Semester I												
Course Category	**Course Code**	**Course Title**	**Nature of Course**	**No. of Credits**	**Teaching (Contact hrs/ week)**		**Evaluation Scheme (Marks)**			**Minimum Passing (Marks)**		
					L	**P**	**Internal**	**External**	**Total**	**Internal**	**External**	**Total**
MM	SCA41MML101	Fundamentals of Computer	Lecture	2	2		30	20	50		08	20
MM	SCA41MML102	3D Modeling Basics	Lecture	2	2		30	20	50		08	20
MM	SCA41MMP101	Practical Based on OpenOffice	Practical	1	-	2	30	20	50		08	20
MM	SCA41MMP102	Practical Based on 3D Modeling Basics	Practical	1	-	2	30	20	50		08	20
IKS	SCA41IKT101	Indian Psychology and yoga	Lecture	2	2	-	30	20	50		08	20
AEC		Basket of AEC From University	Lecture	2	2	-	30	20	50		08	20
OE		Basket of OE From University	Lecture	2	2	-	30	20	50		08	20
OE		Basket of OE From University	Lecture	2	2	-	30	20	50		08	20
VSC	SCA41VSP101	Introduction to Image Manipulation	Practical	2	-	4	30	20	50		08	20
SEC	SCA41SEL101	Foundation of Art	Lecture	2	2	-	30	20	50		08	20
VEC		Basket of VEC From University	Lecture	2	2	-	30	20	50		08	20
CC		Basket of CC From University	Practical	2	-	4	50	-	50	08	-	20
			Total	**22**	**16**	**12**	**360**	**240**	**600**			

Note:

Nature of Course: L- Lecture, P-Practical, S-Seminar, J-Project, I-Internship, D-Dissertation,

Course Category: MM-Major Mandatory, ME-Major Elective, MI-Minor, OE-Generic / Open electives, VSC-Vocational skill course, SEC-Skill Enhancement course, AEC-Ability Enhancement course, IKS-Indian Knowledge system, VEC-Value Education course, OJT-On Job Training / Internship / Apprenticeship, FP-Field project, CEP-Community engagement and service, CC-Co – curricular course, RM-Research methodology, RP-Research project

First Year- Semester II												
Course Category	**Course Code**	**Course Title**	**Nature of Course**	**No. of Credits**	**Teaching (Contact hrs/ week)**		**Evaluation Scheme (Marks)**			**Minimum Passing (Marks)**		
					L	**P**	**Internal**	**External**	**Total**	**Internal**	**External**	**Total**
MM	SCA41MML103	3D Animation Basics	Lecture	2	2		30	20	50		08	20
MM	SCA41MML104	Character Design and Animation	Lecture	2	2		30	20	50		08	20
MM	SCA41MMP103	Practical Based on 3D Animation Basics	Practical	1	-	2	30	20	50		08	20
MM	SCA41MMP104	Practical Based on Character Design and Animation	Practical	1	-	2	30	20	50		08	20
MI		Basket of MI From University	Lecture	2	2	-	30	20	50		08	20
AEC		Basket of AEC From University	Lecture	2	2	-	30	20	50		08	20
OE		Basket of OE From University	Lecture	2	2	-	30	20	50		08	20
OE		Basket of OE From University	Lecture	2	2	-	30	20	50		08	20
VSC	SCA41VSP102	Advance Image Manipulation	Practical	2	-	4	30	20	50		08	20
SEC	SCA41SEL102	Script writing and Storyboard Design	Lecture	2	2	-	30	20	50		08	20
VEC		Basket of VEC From University	Lecture	2	2	-	30	20	50		08	20
CC		Basket of CC From University	Practical	2	-	4	50	-	50	08	-	20
			Total	**22**	**16**	**12**	**360**	**240**	**600**			

Note:

Nature of Course: L- Lecture, P-Practical, S-Seminar, J-Project, I-Internship, D-Dissertation,

Course Category: MM-Major Mandatory, ME-Major Elective, MI-Minor, OE-Generic / Open electives, VSC-Vocational skill course, SEC-Skill Enhancement course, AEC-Ability Enhancement course, IKS-Indian Knowledge system, VEC-Value Education course, OJT-On Job Training / Internship / Apprenticeship, FP-Field project, CEP-Community engagement and service, CC-Co – curricular course, RM-Research methodology, RP-Research project

Level 4.5 Award of UG certificate with 40 credits and an additional 4-credits core NSQF course / internship OR continue with major and minor

Second Year - Semester III												
Course Category	**Course Code**	**Course Title**	**Nature of Course**	**No. of Credits**	**Teaching (Contact hrs/ week)**		**Evaluation Scheme (Marks)**			**Minimum Passing (Marks)**		
					L	**P**	**Internal**	**External**	**Total**	**Internal**	**External**	**Total**
MM	SCA41MML201	Texture Painting	Lecture	2	2	-	30	20	50	-	08	20
MM	SCA41MML202	Basics of Character Animation	Lecture	2	2	-	30	20	50	-	08	20
MM	SCA41MML203	Web Designing	Lecture	2	2	-	30	20	50	-	08	20
MM	SCA41MMP201	Practical Based on Texture Painting	Practical	1	-	2	30	20	50	-	08	20
MM	SCA41MMP202	Practical Based on Basics of Character Animation	Practical	1	-	2	30	20	50	-	08	20
OE		Basket of OE From University	Lecture	2	2	-	30	20	50	-	08	20
MI		Basket of MI From University	Lecture	3	3	-	60	40	100	-	16	40
MI		Basket of MI From University	Practical	1	-	2	30	20	50	-	08	20
AEC		Basket of AEC From University	Lecture	2	2	-	30	20	50	-	08	20
VSC	SCA41VSP201	Graphics Design	Practical	2	-	4	30	20	50	-	08	20
FP	SCA41FPJ201	Field Project	Project	2	-	4	30	20	50	-	08	20
CC		Basket of CC From University	Practical	2	-	4	50	-	50	08	-	20
			Total	**22**	**13**	**18**	**390**	**260**	**650**			

Note:

Nature of Course: L- Lecture, P-Practical, S-Seminar, J-Project, I-Internship, D-Dissertation,

Course Category: MM-Major Mandatory, ME-Major Elective, MI-Minor, OE-Generic / Open electives, VSC-Vocational skill course, SEC-Skill Enhancement course, AEC-Ability Enhancement course, IKS-Indian Knowledge system, VEC-Value Education course, OJT-On Job Training / Internship / Apprenticeship, FP-Field project, CEP-Community engagement and service, CC-Co – curricular course, RM-Research methodology, RP-Research project

Second Year - Semester IV												
Course Category	**Course Code**	**Course Title**	**Nature of Course**	**No. of Credits**	**Teaching (Contact hrs/ week)**		**Evaluation Scheme (Marks)**			**Minimum Passing (Marks)**		
					L	**P**	**Internal**	**External**	**Total**	**Internal**	**External**	**Total**
MM	SCA41MML204	Advance Texture Painting	Lecture	2	2	-	30	20	50		08	20
MM	SCA41MML205	Advanced Character Animation	Lecture	2	2	-	30	20	50		08	20
MM	SCA41MML206	User Experience (UX) & User Interface Design(UI) Design	Lecture	2	2	-	30	20	50		08	20
MM	SCA41MMP203	Practical Based on Advance Texture Painting	Practical	1	-	2	30	20	50		08	20
MM	SCA41MMP204	Practical Based on Advanced Character Animation	Practical	1	-	2	30	20	50		08	20
OE		Basket of OE From University	Lecture	2	2	-	30	20	50		08	20
MI		Basket of MI From University	Lecture	3	3	-	60	40	100		16	40
MI		Basket of MI From University	Practical	1	-	2	30	20	50		08	20
AEC		Basket of AEC From University	Lecture	2	2	-	30	20	50		08	20
SEC	SCA41SEP201	Sound Editing	Practical	2	-	4	30	20	50		08	20
CEP	SCA41CEP201	Community Engagement Program	Practical	2	-	4	50	-	50	08	-	20
CC		Basket of CC From University	Practical	2	-	4	50	-	50	08	-	20
		Total		**22**	**13**	**18**	**390**	**260**	**650**			

Note:

Nature of Course: L- Lecture, P-Practical, S-Seminar, J-Project, I-Internship, D-Dissertation,

Course Category: MM-Major Mandatory, ME-Major Elective, MI-Minor, OE-Generic / Open electives, VSC-Vocational skill course, SEC-Skill Enhancement course, AEC-Ability Enhancement course, IKS-Indian Knowledge system, VEC-Value Education course, OJT-On Job Training / Internship / Apprenticeship, FP-Field project, CEP-Community engagement and service, CC-Co – curricular course, RM-Research methodology, RP-Research project

Third Year - Semester V												
Course Category	**Course Code**	**Course Title**	**Nature of Course**	**No. of Credits**	**Teaching (Contact hrs/ week)**		**Evaluation Scheme (Marks)**			**Minimum Passing (Marks)**		
					L	**P**	**Internal**	**External**	**Total**	**Internal**	**External**	**Total**
MM	SCA41MML301	3D Design and Visualization	Lecture	2	2	-	30	20	50		08	20
MM	SCA41MML302	Visual Effects	Lecture	2	2	-	30	20	50		08	20
MM	SCA41MML303	Rotoscope Animation	Lecture	2	2		30	20	50		08	20
MM	SCA41MMP301	Practical Based on 3D Design and Visualization	Practical	1	-	2	30	20	50		08	20
MM	SCA41MMP302	Practical Based on Visual Effects	Practical	1	-	2	30	20	50		08	20
ME	SCA41MEL301	1. Virtual Reality	Lecture	3	3	-	60	40	100		16	40
	SCA41MEL302	2. Basics of Cinematography & Lights										
ME	SCA41MEP301	1. Practical Based on Virtual Reality	Practical	1	-	2	30	20	50		08	20
	SCA41MEP302	2. Practical Based on Basics of Cinematography & Lights										
MI		Basket of MI From University	Lecture	3	2	-	60	40	100		16	40
MI		Basket of MI From University	Practical	1	-	2	30	20	50		08	20
VSC	SCA41VSP301	Rotoscope using tracking	Practical	2	-	4	30	20	50		08	20
FP	SCA41FPJ301	Field Project	Project	2		4	30	20	50		08	20
Total		**Total**		**20**	**11**	**16**	**390**	**260**	**650**			

Note:

Nature of Course: L- Lecture, P-Practical, S-Seminar, J-Project, I-Internship, D-Dissertation,

Course Category: MM-Major Mandatory, ME-Major Elective, MI-Minor, OE-Generic / Open electives, VSC-Vocational skill course, SEC-Skill Enhancement course, AEC-Ability Enhancement course, IKS-Indian Knowledge system, VEC-Value Education course, OJT-On Job Training / Internship / Apprenticeship, FP-Field project, CEP-Community engagement and service, CC-Co – curricular course, RM-Research methodology, RP-Research project

Third Year - Semester VI												
Course Category	**Course Code**	**Course Title**	**Nature of Course**	**No. of Credits**	**Teaching (Contact hrs/ week)**		**Evaluation Scheme (Marks)**			**Minimum Passing (Marks)**		
					L	**P**	**Internal**	**External**	**Total**	**Internal**	**External**	**Total**
MM	SCA41MML304	Video Editing	Lecture	2	2	-	30	20	50		08	20
MM	SCA41MML305	Digital Sculpting	Lecture	2	2	-	30	20	50		08	20
MM	SCA41MML306	Motion Graphic Design	Lecture	2	2	-	30	20	50		08	20
MM	SCA41MMP303	Practical Based on Video Editing	Practical	1	-	2	30	20	50		08	20
MM	SCA41MMP304	Practical Based on Digital Sculpting	Practical	1	-	2	30	20	50		08	20
ME	SCA41MEL303	Augmented Reality	Lecture	3	3	-	60	40	100		16	40
	SCA41MEL304	Basics of Photography										
ME	SCA41MEP303	Practical Based on Augmented Reality	Practical	1	-	2	30	20	50		08	20
	SCA41MEP304	Practical Based on Basics of Photography										
MI		Basket of MI From University	Lecture	3	2	-	60	40	100		16	40
MI		Basket of MI From University	Practical	1	-	2	30	20	50		08	20
OJT	SCA41JTP301	On Job Training	Practical	4		8	30	20	50		08	20
		Total		**20**	**11**	**16**	**300**	**240**	**600**			

Note:

Nature of Course: L- Lecture, P-Practical, S-Seminar, J-Project, I-Internship, D-Dissertation,

Course Category: MM-Major Mandatory, ME-Major Elective, MI-Minor, OE-Generic / Open electives, VSC-Vocational skill course, SEC-Skill Enhancement course, AEC-Ability Enhancement course, IKS-Indian Knowledge system, VEC-Value Education course, OJT-On Job Training / Internship / Apprenticeship, FP-Field project, CEP-Community engagement and service, CC-Co – curricular course, RM-Research methodology, RP-Research project

Fourth Year - Semester VII												
Course Category	**Course Code**	**Course Title**	**Nature of Course**	**No. of Credits**	**Teaching (Contact hrs/ week)**		**Evaluation Scheme (Marks)**			**Minimum Passing (Marks)**		
					L	**P**	**Internal**	**External**	**Total**	**Internal**	**External**	**Total**
MM	SCA41MML401	Short Film Making	Lecture	3	3	-	60	40	100		16	40
MM	SCA41MML402	Advance Character Modeling	Lecture	3	3	-	60	40	100		16	40
MM	SCA41MML403	Compositing Essentials	Lecture	3	3	-	60	40	100		16	40
MM	SCA41MMP401	Practical Based on Short Film Making	Practical	1	-	2	30	20	50		08	20
MM	SCA41MMP402	Practical Based on Advance Character Modeling	Practical	1	-	2	30	20	50		08	20
MM	SCA41MMP403	Practical Based on Compositing Essentials	Practical	1	-	2	30	20	50		08	20
ME	SCA41MEL401	Cyber law & Copyrights	Lecture	3	3	-	60	40	100		16	40
	SCA41MEL402	Advertisement & Legal Aspects										
ME	SCA41MEP401	Practical Based on Cyber law & Copyrights	Practical	1	-	2	30	20	50		08	20
	SCA41MEP402	Practical Based on Advertisement & Legal Aspects										
RM	SCA41RML401	Research Methodology	Lecture	3	3	-	60	40	100		16	40
RM	SCA41RMP401	Practical based on Research Methodology	Practical	1	-	2	30	20	50		08	20
		Total		**20**	**15**	**10**	**450**	**300**	**750**			

Note:

Nature of Course: L- Lecture, P-Practical, S-Seminar, J-Project, I-Internship, D-Dissertation,

Course Category: MM-Major Mandatory, ME-Major Elective, MI-Minor, OE-Generic / Open electives, VSC-Vocational skill course, SEC-Skill Enhancement course, AEC-Ability Enhancement course, IKS-Indian Knowledge system, VEC-Value Education course, OJT-On Job Training / Internship / Apprenticeship, FP-Field project, CEP-Community engagement and service, CC-Co – curricular course, RM-Research methodology, RP-Research project

Fourth Year - Semester VIII												
Course Category	**Course Code**	**Course Title**	**Nature of Course**	**No. of Credits**	**Teaching (Contact hrs/ week)**		**Evaluation Scheme (Marks)**			**Minimum Passing (Marks)**		
					L	**P**	**Internal**	**External**	**Total**	**Internal**	**External**	**Total**
MM	SCA41MML404	Dynamic Simulation	Lecture	3	3	-	60	40	100		16	40
MM	SCA41MML405	Realistic Character Modelling	Lecture	3	3	-	60	40	100		16	40
MM	SCA41MML406	Advanced compositing	Lecture	3	3	-	60	40	100		16	40
MM	SCA41MMP404	Practical Based on Dynamic Simulation	Practical	1	-	2	30	20	50		08	20
MM	SCA41MMP405	Practical Based on Realistic Character Modelling	Practical	1	-	2	30	20	50		08	20
MM	SCA41MMP406	Practical Based on Advanced compositing	Practical	1	-	2	30	20	50		08	20
ME	SCA41MEL403	Motion tracking techniques	Lecture	3	3	-	60	40	100		16	40
	SCA41MEL404	Print Design Layout										
ME	SCA41MEP403	Practical Based on Motion tracking techniques	Practical	1	-	2	30	20	50		08	20
	SCA41MEP404	Practical Based on Print Design Layout										
OJT	SCA41JTP401	On job Training	Practical	4	-	8	60	40	100		16	40
		Total		**20**	**12**	**16**	**420**	**280**	**700**			

Note: Nature of Course: L- Lecture, P-Practical, S-Seminar, J-Project, I-Internship, D-Dissertation,

Course Category: MM-Major Mandatory, ME-Major Elective, MI-Minor, OE-Generic / Open electives, VSC-Vocational skill course, SEC-Skill Enhancement course, AEC-Ability Enhancement course, IKS-Indian Knowledge system, VEC-Value Education course, OJT-On Job Training / Internship / Apprenticeship, FP-Field project, CEP-Community engagement and service, CC-Co – curricular course, RM-Research methodology, RP-Research project

Fourth Year - Semester VII (Honours with Research)												
Course Category	**Course Code**	**Course Title**	**Nature of Course**	**No. of Credits**	**Teaching (Contact hrs/ week)**		**Evaluation Scheme (Marks)**			**Minimum Passing (Marks)**		
					L	**P**	**Internal**	**External**	**Total**	**Internal**	**External**	**Total**
MM	SCA41MML407	Compositing Techniques	Lecture	3	3	-	60	40	100		16	40
MM	SCA41MML408	3D Architectural Design	Lecture	3	3	-	60	40	100		16	40
MM	SCA41MMP406	Practical Based on Compositing Techniques	Practical	1	-	2	30	20	50		08	20
MM	SCA41MMP407	Practical Based on 3D Architectural Design	Practical	1	-	2	30	20	50		08	20
ME	SCA41MEL405	1. Virtual cinematography	Lecture	3	3	-	60	40	100		16	40
	SCA41MEL406	2. Advanced Visual effects										
ME	SCA41MEP405	1. Practical Based on virtual cinematography	Practical	1	-	2	30	20	50		08	20
	SCA41MEP406	2.Practical Based on Advanced Visual effects										
RM	SCA41RML401	Research Methodology	Lecture	3	3	-	60	40	100		16	40
RM	SCA41RMP401	Practical based on Research Methodology	Practical	1	-	2	30	20	50		08	20
RP	SCA41RPJ401	Research Project	Practical	4	-	8	60	40	100		16	40
		Total		**20**	**12**	**16**	**420**	**280**	**700**			

Note:

Nature of Course: L- Lecture, P-Practical, S-Seminar, J-Project, I-Internship, D-Dissertation,

Course Category: MM-Major Mandatory, ME-Major Elective, MI-Minor, OE-Generic / Open electives, VSC-Vocational skill course, SEC-Skill Enhancement course, AEC-Ability Enhancement course, IKS-Indian Knowledge system, VEC-Value Education course, OJT-On Job Training / Internship / Apprenticeship, FP-Field project, CEP-Community engagement and service, CC-Co – curricular course, RM-Research methodology, RP-Research project

Fourth Year - Semester VIII (Honours with Research)												
Course Category	**Course Code**	**Course Title**	**Nature of Course**	**No. of Credits**	**Teaching (Contact hrs/ week)**		**Evaluation Scheme (Marks)**			**Minimum Passing (Marks)**		
					L	**P**	**Internal**	**External**	**Total**	**Internal**	**External**	**Total**
MM	SCA41MML408	Gaming Techniques	Lecture	3	3	-	60	40	100		16	40
MM	SCA41MML409	Advanced 3D Effects	Lecture	3	3	-	60	40	100		16	40
MM	SCA41MMP408	Practical Based on Gaming Techniques	Practical	1	-	2	30	20	50		08	20
MM	SCA41MMP409	Practical Based on Advanced 3D Effects	Practical	1	-	2	30	20	50		08	20
ME	SCA41MEL407	3D Element Creation	Lecture	3	3	-	60	40	100		16	40
	SCA41MEL408	Advanced Motion Capture technique										
ME	SCA41MEP407	Practical Based on 3D Element Creation	Practical	1	-	2	30	20	50		08	20
	SCA41MEP408	Practical Based on Advanced Motion Capture technique										
RP	SCA41RPJ402	Research Project	Practical	8	-	16	120	80	200		32	80
		Total		**20**	**09**	**22**	**390**	**260**	**650**			

Note:

Nature of Course: L- Lecture, P-Practical, S-Seminar, J-Project, I-Internship, D-Dissertation,

Course Category: MM-Major Mandatory, ME-Major Elective, MI-Minor, OE-Generic / Open electives, VSC-Vocational skill course, SEC-Skill Enhancement course, AEC-Ability Enhancement course, IKS-Indian Knowledge system, VEC-Value Education course, OJT-On Job Training / Internship / Apprenticeship, FP-Field project, CEP-Community engagement and service, CC-Co – curricular course, RM-Research methodology, RP-Research project

Semester: FIRST

Syllabus
Semester-I

Course Code: SCA41MML101 **Course name:** Fundamentals of Computer **Course category:** Major Mandatory		
Credits: 2	**Teaching Scheme:** L-2 P-0	**Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Basics of mathematics and working of Computer System.		
Course Objectives:		
To impart basic introduction to computer hardware, components, computer number system, how the CPU works, fundamental about algorithms and flowchart as well as different type of software.		
Course Outcomes: At the end of the course, the students will be able to -		
CO1: Bridge the fundamental concepts of computers with the present level of knowledge of the students.		
CO2: Student will develop a vocabulary of key terms related to the computer and to software program menus.		
CO3: Familiarize operating systems, programming languages, peripheral devices, networking, multimedia and internet.		
CO4: Introduction to Database management system.		

Contents –

Unit	Content	Teaching hours
1	**An Introduction to Era of Computers:** Introduction to Data & Information, Need of Information & Need for computerization, Components of Information Technology, Definition of Computer Characteristics of a Computer System, Generations of a computer System, Classification of Computers: Analog Computer, Digital Computer, General Purpose Computer, Special Purpose Computer, Super Computer, Mainframe Computer, Medium Computer, Mini Computer, Micro Computer, Hybrid Computer. Components & I/O Devices: Major Components of a Computer System: Hardware & Software ,Organization of Computer, I/O Devices: Keyboard, Mouse, Joystick, Track Ball, Touch Screen, MICR (Magnetic Ink Character Recognition), Light Pen, Voice Input Recognition Devices, Optical Recognition, Printers & Its Types, Monitor (VDU), Flat Panel Display, Connecting Various Peripheral Devices: Parallel Interface, Serial Interface.	10
2	**Storage Devices (Computer Memory System):** Magnetic Disk Memory, Hard Disk Memory, Removable Disk Memory, CD-ROM, Data Storage and Retrieval Mechanism. **Computer Data representation & Processors:** Computer Data Representation and storage ,Decimal Number System, Binary Number System, Octal Number System, Hexadecimal Number System. **Operating System Concepts:** Introduction to Operating System, Definition, Structure of Operating System, types of Operating System, CUI (Character User Interface) & GUI (Graphical User Interface), Features of Operating System.	10
3	**Programming Languages:** Classification of Programming Languages: Machine language, Assembly Language, High level Language ,Advantages and Disadvantage. **Types of Network:** LAN (Local Area Network), WAN (Wide Area Network), MAN (Metropolitan Area Network), TCP/IP, VPN (Virtual Private Network).	10

Text Books:
1. Fundamentals of Computers V. Rajaraman PHI Publication IVth Edition.
2. Fundamentals of Programming Raj K. Jain S.Chand Publication.
3. Computer Fundamental B. Ram BPB Publication.
4. Fundamentals of Information Technology Chetan Srivastava Kalyani Publishers.

Syllabus
Semester-I

Course Code: SCA41MML102 **Course name:** 3D Modeling Basics **Course category:** Major Mandatory		
Credits: 2	**Teaching Scheme:** L-2 P-0	**Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Basic Graphic Design Knowledge		
Course Objectives:		
The basic objective is to create 3D computer objects for using interactive 3D applications, and computer games, Virtual Simulations etc.		
Course Outcomes: At the end of the course, the students will be able to -		
CO1: Learn to User interface and Navigation.		
CO2: How to create 3D Objects and Understanding the different materials.		
CO3: Understanding the textures and world setting.		
CO4: Understand how to render 3d object in different types of formats.		

Contents –

Unit	Content	Teaching hours
1	**Interface:** Screen, User Preference Window ,Preset Interface Arrangement, 3D Window Window Modes ,Layers, Moving in 3D Space, Blender View Menu Properties Window, Blender Windows, Console Windows, Outliner Window, Text Editor Window. **Navigation:** Navigate & Save, Windows Explorer, Append Pack and Import, Packing Data Importing Objects **Create Edit Object:** Basic Mesh, Placing Objects, Edit/Object Mode, Mesh Types, Cursor Placement Moving Objects, Scaling Objects, Rotating Objects, Precision Manipulation, Transformation Widget, Mesh Vertex Editing ,Selecting Vertices, Edit Mode Selection ,Creating Vertices, Center Points, Object Display, Shading Smooth/Flat, Extruding Shapes, Proportional Vertex Editing, Knife Tool ,Creating Ground ,Edge Loop Selection, Tool Shelf Joining/Separating Meshes ,Modifiers	10
2	**Materials** Blender Material Slot, Materials, Material Settings, Preview Tab, Materials Buttons,Material Colors, Adding a New Material, Diffuse Tab, Specular Tab, Hardness, Ramp Shaders ,Transparency Halos **Textures** Textures, Texture Mapping, Displacement Mapping, UV Texture Mappin Selective UV Mapping,Unwrapping with Seams	10
3	**World Settings** World Settings, Mist, Stars, Texture as Background, Image as Background Image as Template, Lighting and Camera, Lighting : Lighting Types and Settings, Cameras, Settings Options, **Rendering** Render Settings,, Rendering a JPEG Image, Creating a Video Clip	10

Text Books:
1. Introduction to BLENDER 3D (A Book for Beginners 2.54+) - John M Blain
Reference Books:
1. Blender Basics Classroom Tutorials James Chronister 5th Edition
Online Resources: Blender 2.83 Reference Manual Blender

Syllabus
Semester-I

Course Code: SCA41MMP101 **Course name:** Practical Based on Open Office **Course category:** Major Mandatory		
Credits: 1	**Teaching Scheme:** L-0 P-2	**Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Basics Knowledge of Computer Software.		
Course Objectives:		
To study text formatting, create presentation, formulas for Mathematical operations.		
Course Outcomes: At the end of the course, the students will be able to -		
CO1: Design Resume and Greeting Cards.		
CO2: Design professional documents.		

Content -

Sr.no.	Description of Practical	Practical Hours
1	Prepare any official letter document.	1
2	Generate simple and effective tables and graphs to describe. experimental data	1
3	Design Professional Resume.	1
4	Generate equations, sample calculations, and basic diagrams.	1
5	Perform calculations both manually inputting formulas and built-in functions.	1
6	Create Graph and Tables and Integrate both graphs and tables created in Microsoft Excel into a report file in Microsoft Word.	1
7	To Create a PowerPoint Presentation include Audio, Video and animation effect using PowerPoint.	1
8	To create any document Using Word Processing Tool and different styles	1
9	To create any document Using Presentation Tool	1
10	To Create a graph of any numeric data in Microsoft office and give appropriate Label.	1

Text Books:

1. Master Book Of Computer: Learn MS Office, Basic Computer, MS Excel, Excel Formulas, Tally, and HTML by Mangesh Bhuvad.

Syllabus
Semester-I

Course Code: SCA41MMP102 **Course name:** Practical Based on 3D Modeling Basics **Course category:** Major Mandatory		
Credits: 1	**Teaching Scheme:** L-0 P-2	**Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Basics Knowledge of Graphics Software.		
Course Objectives:		
Design 3D Models and 3D animations.		
Course Outcomes: At the end of the course, the students will be able to -		
CO1: Design 3D Model.		
CO2: Create 3D Animation.		

Contents –

Sr.no.	Description of Practical	Practical Hours
1	Overview of the Graphic User Interface	1
2	Learning how to add objects	1
3	Procedure of manipulating objects	1
4	Overview of Edit Mode	1
5	Learning about different Edit Mode Tools	1
6	Overview of Shading workspace	1
7	Learning different Modifiers	1
8	Advanced object Editing techniques	1
9	Procedure of applying a material on an object	1
10	Procedure to apply material on individual face of an object	1

Text Books:
1. Introduction to BLENDER 3D (A Book for Beginners 2.54+) - John M Blain

Syllabus
Semester-I

Course Code: SCA41VSP101 **Course name:** Introduction to Image Manipulation **Course category:** Vocational skill course		
Credits: 2	**Teaching Scheme:** L-0 P-4	**Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Basics Knowledge of Graphics Software.		
Course Objectives:		
The basic objective is editing photos, apply Different types of Effects on Photos, Website Prototype Design.		
Course Outcomes: At the end of the course, the students will be able to -		
CO1: Design Special effects on image using filters.		
CO2: Design Business cards, Logos, flyers.		

Contents –

Sr.no.	Description of Practical	Practical Hours
1	Create a passport sizes photographs using patterns	2
2	Design collage template using transformations	2
3	Create a clipping mask effects for different types of shapes	2
4	Design 2D background using pen tool and selection tools	2
5	Design perspective wallpaper using vanishing point filter	2
6	Make color correction in image using image Adjustment layers	2
7	Design creative background using gradient, texture and patterns	2
8	Create blending effect of multiple images using gradient and masking	2
9	Design different types of shapes using transformations	2
10	To study selection tools of different types object, image selections	2

Text Books:

1. Adobe Photoshop CC Classroom in a Book by Andrew Faulkner.

Syllabus
Semester-I

Course Code: SCA41SEL101 **Course name:** Foundation of Art **Course category:** Skill Enhancement course		
Credits: 2	**Teaching Scheme:** L-2 P-0	**Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Basics of Drawing**.**		
Course Objectives:		
The basic objective of is Understand the drawing, Textures, Perspective and color theory.		
Course Outcomes: At the end of the course, the students will be able to -		
CO1: Learn Drawing techniques, and Geometrical shapes and forms		
CO2: Understand Different types of Perspective, and 3d creating a 3DText		
CO3: Basics of Color Theory.		

Contents –

Unit	Content	Teaching hours
1	**Introduction to Drawing** How to Draw, How to Choose a Pencil, How to improve you're Drawing Skills, Basics of Sketching & Drawing (with practice): Lines in different grades of pencils HB +0.8b Shading in pencil medium, Shading in different angles of pencil strokes, Formatting in different textures with pencil shading. **Drawing Geometrical Shapes and Forms** Draw a Box, Draw a Circle, Draw a cylinder, Draw a Hexagon, Draw a Perfect Pentagram, Draw an Octagonal Based Pyramid	10
2	**Perspective Drawing** One-point Perspective, Two-point Perspective, Three point perspective, Perspective in lines in landscapes, Different head shapes,Characters **Drawing 3D Text** Draw 3D Block Letters , Draw Bubble Letters,Design a 3D Logo	10
3	**Colour Theory** Colour and Colour Identification, Colour Theory, Colour Characteristics and value, Colour Mixtures, Importance and uses of Colours in our Life .	10

Text Books:

1. Figure drawing made easy Aditya Chari
2. Design Fundamentals Dr. Utpal Barua IIT Guwahati IVth Edition.
3. Perspective Milind MulikJyotsna Prakasha
4. Colour Theory, Prof. Jayprakash Jagtap.

Semester: SECOND

Syllabus
Semester-II

Course Code: SCA41MML103 **Course name:** 3D Animation Basics **Course category:** Major Mandatory		
Credits: 2	**Teaching Scheme:** L-2 P-0	**Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Basic knowledge of 3D Modeling.		
Course Objectives:		
The basic objective of 3D Animation basics is to create Key frame Animation, understanding Timeline, Particles etc.		
Course Outcomes: At the end of the course, the students will be able to -		
CO1: Learn to Animation Basics		
CO2: Understanding the Constraints		
CO3: Adding Armatures		
CO4: Understand Particle Systems and Video Sequence Editing		

Contents –

Unit	Content	Teaching hours
1	**Animation Basics** Moving, Rotating & Scaling, Viewing Your Animation, Graph Editor Window Editing The Curve, Curve Types, Constant Extrapolation, Curve Modifying Automatic Key framing, Animating Other Features, Keying Sets, Wind Strength Animation **Child Parent Relationships** Child-Parent, Child of Constraint **Constraints** Introduction, Constraint Stack, Transform, Tracking, Relationships, Duplicating on Curves, Extruding on Curves.	10
2	**Armatures** Armatures, Manually Assign Vertices, How to Assign Vertices, Vertex Groups Adding Armatures, Armature Display, Editing Bones, Automatic Key framing Inverse Kinematics	10
3	**Particle Systems** Overview, Nomenclature, Setup, Settings & Material Influence, Particle Buttons Starting a System, Material on Particles, Interaction, Wind, Sample Settings Keyed Particles, Boids Particles, Hair Particles, Video Sequence Editing Making a Movie, The Video Editing Screen.	10

Text Books:
1. Introduction to BLENDER 3D (A Book for Beginners 2.54+) John M Blain.
2**.** Blender Basics Classroom Tutorials, James Chronister
Online Resources: 1. Blender 2.83 Reference Manual Blender

Syllabus
Semester-II

Course Code: SCA41MML104 **Course name:** Character Design and Animation **Course category:** Major Mandatory		
Credits: 2	**Teaching Scheme:** L-2 P-0	**Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Basic knowledge of Drawing.		
Course Objectives:		
The basic objective of Character Design is to create a Character like Cartoon Character, Realistic Character.		
Course Outcomes: At the end of the course, the students will be able to -		
CO1: Learn the basic Shapes for Creating the Character With the shapes, Design the basic character with details, and understand the different Body Structure.		
CO2: Understanding the Constraints.		
CO3: Learn about the history of animation, Learn Types of animation.		
CO4: Learn Principles of animation.		

Contents –

Unit	Content	Teaching hours
1	**Introduction:** Traditional ways of Drawings, Basic shapes, Combination of shape, Constructing Character, Putting different shapes together, Attributes (Head, Eyes Ear, Nose, etc) Proportions, Expression, Measuring, Poses and Gestures,Dress up, Props, Shadows **Body Construction** Men Body Structure, Women Body Structure, Kid Body Structure,Making the Character Alive	10
2	**Animation History:** Introduction of animation, Discovery of animation Animation techniques : Thaumatrope, Phenakistoscope, Zoetrope, Praxinoscope, Kinestoscope Flip book, Cinematograph, The Birth of Cartoon Characters, Cell animation **Types of animation** Traditional animation, 2D animation, 3D animation, Motion Graphics,Stop motion.	10
3	**Principles of animation:** Squash and Stretch, Anticipation, Staging, Straight Ahead Action and Pose-to-pose Action, Follow Through and Overlapping Action, Slow In and Out, Arcs, Secondary Action, Timing Exaggeration, Solid Drawing, Appeal.	10

Text Books:

1. Character Design (Learn the art of Cartooning step by step) Sherm Cohen Water Foster 1st Edition.
2. The 5 Types of Animation – A Beginner's Guide.
3. Introduction to computer animation and Its possible educational applications Sajid Musa, RushanZiatdinov, Carol Griffiths.
4. Student Workbook Dr. Vinay Swarup Mehrotra.

Syllabus
Semester-II

Course Code: SCA41MMP103 **Course name:** Practical Based on 3D Animation Basics **Course category:** Major Mandatory		
Credits: 1	**Teaching Scheme:** L-0 P-2	**Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Basics Knowledge of Graphics Software.		
Course Objectives:		
Design 3D Models and 3D animations		
Course Outcomes: At the end of the course, the students will be able to -		
CO1: Design a 3D Model that is rig		
CO2: Understanding the 3 point lighting and camera setup		

Contents –

Sr.no.	Description of Practical	Practical Hours
1	Learning about Parenting and Constraints	1
2	Procedure to Apply Textures to an object using image editing software	1
3	To study Working of Armatures	1
4	Procedure to use HDRI	1
5	Learning about particles	1
6	Learning 3 Point Lighting Setup	1
7	Learning Camera setup and properties	1
8	Procedure to Render an image	1
9	Procedure to render an animation	1
10	Learning Basic Video Editing	1

Text Books:

1. Introduction to BLENDER 3D (A Book for Beginners 2.54+) - John M Blain.

Syllabus
Semester-II

Course Code: SCA41MMP104 **Course name:** Practical Based on Character Design and Animation **Course category:** Major Mandatory
Credits: 1 **Teaching Scheme:** L-0 P-2 **Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Basics Knowledge of Drawing.
Course Objectives:
The basic objective of Character Design is to create a Character like Cartoon Character, Realistic Character.
Course Outcomes: At the end of the course, the students will be able to -
CO1: Learn about the history of animation, Learn Types of animation
CO2: Understand Principles of animation

Contents –

Sr.no	Description of Practical	Practical Hours
1	Draw Combinations of shape	1
2	Draw different types of Head shapes	1
3	Draw Different types Eyes and nose	1
4	Draw Different types of ears and lips	1
5	Draw Facial expressions	1
6	Draw Combinations of 3D Forms	1
7	Draw Human body Structure	1
8	Draw Cartoon Characters	1
9	Design 3D Letters	1
10	Design Bubble Letters	1

Text Books:
1. Character Design (Learn the art of Cartooning step by step) Sherm Cohen Water Foster 1st Edition.

Syllabus
Semester-II

Course Code: SCA41VSP102 **Course name:** Advance Image Manipulation **Course category:** Vocational skill course		
Credits: 2	**Teaching Scheme:** L-0 P-4	**Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Basics Knowledge of Graphics Software.		
Course Objectives:		
The basic objective of Advance Image Manipulation is to use filters, use layer styles, understanding retouching tools.		
Course Outcomes: At the end of the course, the students will be able to -		
CO1: Design logos, Business cards and flyers.		
CO2: Learn to design Website PSD.		

Contents –

Sr.no	Description of Practical	Practical Hours
1	Repair image using image retouching tools	2
2	Perform different types of shape operations using shape tools	2
3	Design polar effect using filters	2
4	Create rain effect using filter	2
5	Design wooden texture effect using fibre filter.	2
6	Create effect using displace filter	2
7	Design text effects using layer styles.	2
8	Design educational flyer.	2
9	Design brochures	2
10	Create Prototype for E- Commerce website	2

Text Books:

1. Adobe Photoshop CC Classroom in a Book by Andrew Faulkner

Syllabus
Semester-II

Course Code: SCA41SEL102	**Course name:** Script Writing and Storyboard Design	
Course category: Skill Enhancement course		
Credits: 2	**Teaching Scheme:** L-2 P-0	**Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Basic Knowledge of Character Designing and Communication Skills.		
Course Objectives:		
Design 3D Models and 3D animations.		
Course Outcomes: At the end of the course, the students will be able to -		
CO1: Basics of Script.		
CO2: Art of writing.		
CO3: Final Drafting of the script.		

Contents –

Unit	Content	Teaching hours
1	**Script Writing Basics** Script Writing Basics, Elements of script writing, Themes, Genre of script Dialogues, Expansions, Voice over, Writing for picture, Art of screenwriting Putting idea on paper, Thinking visually, Explore other medium, stage play, fiction, poetry & studio art, Developing the writer's mind, Approaching screenwriting as a craft(imagination), Construction final draft	10
2	**Breaking down the elements of story** Unpacking idea, Pinpointing interest of story idea, Connecting with audience Establishing final draft with time, Three Act Structure, Beginning, Middle End	10
3	**Storyboard** Benefits of storyboard, Basics of storyboard, Types of storyboard, Camera movements, Storyboard with Sketching creating a storyboard.	10

Text Books:
1. Screenwriting for dummies, Laura Schellhardt.
2. Filmmaking for Dummies, Byan Michael Stoller.

Semester: THIRD

Syllabus
Semester-III

Course Code: SCA41MML201	**Course name:** Texture Painting	
Course category: Major Mandatory		
Credits: 2	**Teaching Scheme:** L-2 P-0	**Evaluation Scheme:** CA-30 ESE-20

Pre-requisites: Basic Knowledge of 3D Modeling

Course Objectives:

1. To impart basic introduction to texture painting, user interface, texture painting tools,
2. How the Texture Painting Software works, fundamental about UV Maps as well as integration of Texture Painting Software with Blender.

Course Outcomes: At the end of the course, the students will be able to -

CO1: Bridge the fundamental concepts of Texture Painting with the present level of Knowledge of the students.

CO2: Student will develop a vocabulary of key terms related to the layers and Mask.

CO3: Familiarize User Interface, Software Tools, Exporting UV Maps and 3d Models.

CO4: Integration between Texture Painting Software and Blender.

Contents -

Unit	Content	Teaching hours
1	**Texture Painting Basics** Visualization Basics, PBR workflow, Texture Painting for Game engines, Texture Pipeline for Movies, What Is UV Mapping?, Texturing Using 3D Painting Applications, Texturing Using 2D Painting Applications. Texture Painting Software Basics of Substance, UI and Tools, Getting Started with Texture Painting Software.	06
2	**Materials and Smart Materials** Layers and Masks, Masks, Smart Masks, Uses of Grunges and Other Procedural Maps.	08
3	**Use of Patterns for Texture Painting** Using Patterns as Height, Patterns as Masks, and Procedural Images as Maps.	08
4	**Integration with Blender** Blender to Texture Painting Software Workflow, Integration with Blender, Exporting from Texture Painting Software for Use in Blender.	08

Text Books:

1. Beginning PBR Texturing : Learn Physically Based Rendering with Adobe's Substance Painter by Abhishek Kumar , First Edition, Apress Publishers
2. Realistic Asset Creation with Adobe Substance 3D, by Zeeshan Jawed Shah, Packt Publishing Limited

Reference Books:

1. Creating Games with Unity, Substance Painter, & Maya by Jingtian Li, Adam Watkins, Kassandra Arevalo, Matthew Tovar , CRC Publications.
2. Digital Texturing & Painting, Owen Demers, Christine Urszenyi, New rider publisher.

Syllabus
Semester-III

Course code: SCA41MML202	**Course name:** Basics of Character Animation	
Course category: Major Mandatory		
Credits: 2	**Teaching Scheme:** L-2 P-0	**Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Basics of Graphics Software and Image Editing.		
Course Objectives:		
To Study Fundamentals of 2D animation techniques.		
Course Outcomes: At the end of the course, the students will be able to -		
CO1: Basic concepts of 2D Animation.		
CO2: Storyboarding & create animated digital multimedia content for media using twining and		
Frame by frame animation.		
CO3: Understand how to create and develop a narrative with storyboarding.		
CO4: Learn different types of File formats.		

Contents –

Unit	Content	Teaching hours
1	**Introduction to** 2D Animation Software **Overview of** 2D Animation Software**:** Understanding the interface, Tools and panels overview **Creating a New Project:** Setting up a new document Document properties and settings, **Drawing Basics** :Brush, Pencil, and Line tools, Shapes and color options, Understanding layers and their importance, **Working with Symbols:** Introduction to symbols, Creating graphic symbols, Using instances in the timeline	06
2	**Animation Fundamentals** **Timeline Basics:** Understanding frames and keyframes, Adding, deleting, and moving frames, Frame labels and markers, **Animating with Twining**: Classic Tween vs. Motion Tween, Tweening properties (position, rotation, and scale), Easing and smoothing animations. **Frame-by-Frame Animation** Creating animations frame by frame, Onion skinning for reference Integrating frame-by-frame with tweening **Working with Sound :** Importing and syncing audio, Basic audio editing within 2D Animation Software	08
3	**Advanced Techniques and Exporting Character Animation** Rigging characters with the Bone tool, Character animation workflow Lip syncing basics **Interactive Elements** Introduction to buttons, Adding interactivity with Action Script (basic scripting)	08

4	**Exporting and Publishing** Exporting animations in different formats (SWF, GIF, video), Publishing for the web, Mobile and desktop application export options **Project Work and Portfolio Development:** Create a short animated project, Assemble a portfolio showcasing your skills, Peer review and feedback session	08

Text Books:
1. Adobe Animate Classroom in a Book by Russell Chun, 2018, Adobe Press 2. Mastering Adobe Animate 2021, by Joseph Labrecque, 2021, Packt Publishing Limited
Reference Books:
1. Beginning Adobe Animate CC, TOM GREEN, Joseph Labrecque, 2017, Apress publisher. 2. Tradigital Animate CC, Stephen Brooks, CRC Press.

Syllabus
Semester-III

Course code: SCA41MML203	**Course name:** Web Designing	**Course category:** Major Mandatory
Credits: 2	**Teaching Scheme:** L-2 P-0	**Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Basic Knowledge of notepad software and web browser.		
Course Objectives:		
Student should able to Design the web page.		
Course Outcomes: At the end of the course, the students will be able to -		
CO1: Understand how to effectively implement HTML tag in the web environment.		
CO2: Use CSS effectively to create well organized, styled web pages.		
CO3: Add Functionality to website using jquery and javascript.		
CO4: Design Different types of sliders Website layouts.		

Contents -

Unit	Content	Teaching hours
1	**Basics of Web Design and Interface** Overview of Web Design Concepts, Web Project Management Fundamentals, Website Development Process, Web site usability & Accessibility **Web Design Software Workspace Overview** Features of Web Design Software Interface, Workspace Elements Overview, Document window overview, Document toolbar overview, Toolbar overview, Status bar overview, Property inspector overview, Rearranging panels in Web Design Software, Common Web Design Software panels, Files panel overview.	06
2	**HTML** HTML overview, features, structure, basic tags, elements , comments in HTML, images, list , types of list, text links, image links, email links, frames, iframes , table, backgrounds, colors, fonts, marquees , layout. **CSS** Concept of CSS, Creating Cascading Style Sheets for Web page design, Creating CSS rules in Web Design Software, syntax, measurement units, Format Text with CSS, Use of CSS Selectors, Embed Style Sheets, and Attach External Style Sheets, CSS Advanced (Grouping, Dimension, Display, Positioning, Floating, Align, Pseudo class, Navigation Bar, Image Sprites, Attribute sector), CSS Color, Creating page Layout and Site Designs, background properties, margin & padding properties, text effects.	08
3	**Javascript** Javascript Types, Variables in JS, Operators in JS, Conditions Statements Java Script Loops JS Events, JS Arrays, Working with Arrays, JS Objects, JS Functions.	08
4	**jQuery and jQuery UI** Introduction to jQuery , jQuery Features , Installing jQuery , jQuery Syntax jQuery Ready Function , jQuery Selectors , jQuery Actions , jQuery plugins , jQuery Validation plugin , jQuery Slideshow , jQuery Dropdown , jQuery UI , Working with jQueryUI , jQuery Accordions , jQuery Tabs , jQuery Tooltips , jQuery Autocomplete.	08

Text Books:
1. ADOBE DREAMWEAVER CC CLASSROOM IN A BOOK by Jim Maivald, 2018,Pearson Education.
2. MASTERING HTML, CSS & Java Script Web Publishing by Laura Lemay (Author), Rafe Colburn (Author), Jennifer Kyrnin (Author), First Edition, BPB Publications.
3. Responsive Web Design with HTML5 and CSS, by Ben Frain, Fourth Edition 2022, Packt Publishing Limited.
Reference Books:
1. Learning Web Design, Jennifer Niederst Robbins, Third Edition, 2007, O'Reilly Media, Incorporated
2. Practical Web Design, Philippe Hong, Packt Publishing, 2018.

Syllabus
Semester-III

Course code: SCA41MMP201 **Course name:** Practical Based on Texture painting **Course Category:** Major Mandatory
Credits: 1 **Teaching Scheme:** L-0 P-2 **Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Basic Knowledge of 3D modeling Software.
Course Objectives:
To study Texture Painting workflow, create UV maps, Layer Masks, Integration between Texture Painting Software and Blender.
Course Outcomes: At the end of the course, the students will be able to -
CO1: Student will develop a vocabulary of key terms related to the Texture Painting.
CO2: Integration between Texture Painting Software and Blender.
CO3: Student will develop and create compatible and clear UV Maps.
CO4: Learn creation of texture using Layers.

Content

Sr.no.	Description of Practical	Practical Hours
1	Understanding the User Interface	2
2	To study the tool panel	2
3	Creating compatible and clear UV Maps	2
4	Exporting 3d model from 3D Creation Suite and Importing the Model	2
5	Perform Texture Painting	2
6	Creating simple 3D Model and Painting Texture on it (Model 1) (Ex: Ceramic Teapot)	2
7	To create a texture using Layers	2
8	Design texture using Smart Mask	2
9	Creating complex 3D Model and Painting Texture on it (Model 2) (Ex: Designer Shoes)	2
10	Integration with Blender software	2
11	Project	10

Reference Books :

1. Beginning PBR Texturing : Learn Physically Based Rendering with Adobe's Substance Painter by Abhishek Kumar , First Edition, Apress Publishers
2. Realistic Asset Creation with Adobe Substance 3D, by Zeeshan Jawed Shah, Packt Publishing Limited

Syllabus
Semester-III

Course code: CA41MMP202 **Course name:** Practical Based on Basics of Character Animation **Course category:** Major Mandatory
Credits: 1 **Teaching Scheme:** L-0 P-2 **Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Basic Knowledge of Graphics Software.
Course Objectives:
Students will acquire proficiency in animation, graphic design, and interactive content creation. They will develop skills in storyboarding, use of the timeline, and exporting animations in various formats.
Course Outcomes: At the end of the course, the students will be able to -
CO1: Storyboarding and create animated digital multimedia content for media using the tools.
CO2: Understand how to create and develop a narrative with storyboarding.
CO3: Students will understand synchronizing visuals with audio elements.
CO4: Student will be able to create an animated web banner ad and export it for web usage.

Content -

Sr.no.	Description of Practical	Practical Hours
1	Create a vector-based logo using Software	2
2	Develop an interactive infographic using basic shapes and objects.	2
3	Animate an abstract art piece using transformation and drawing tools.	2
4	Create an animated typography video using a variety of colors, palettes, and text effects.	2
5	Develop a short animated storyboard for a simple narrative.	2
6	Create an animated music video by synchronizing visuals with audio elements.	2
7	Design an animation that demonstrates the use of shape twinning and symbols.	2
8	Create an animation with a dynamic masking effect.	2
9	Design an animated web banner ad and export it for web usage.	2
10	Undertake a comprehensive project to create a short animated story.	2
11	Project	10

Reference Books:

1. Adobe Animate Classroom In A Book, Russell Chan, Adobe, 2023 release.
2. Adobe Animate CC: Learn by Video (2015 release) by Joseph Labrecque, Rob Schwartz, Russell Chun, Adobe Press.

Syllabus
Semester-III

Course code: SCA41VSP201		**Course name:** Graphics Design
Course category: Vocational Skill Course		
Credits: 2	**Teaching Scheme:** L-0 P-4	**Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Basic Knowledge of Graphics Software.		
Course Objectives:		
To understand how to design different types of vector graphics.		
Course Outcomes: At the end of the course, the students will be able to -		
CO1: To Create Text effect.		
CO2: Design illustrations.		
CO3: Create mobile app prototypes and mockup design.		
CO4: Design Different types of posters, business cards, flyers.		

Content -

Sr.no.	Description of Practical	Practical Hours
1	To Study Workspace of (Graphics Software).	2
2	Design Infographic design using pathfinder and shape builder tools.	2
3	To create a simple digital collage using basic tools like layers, selection tools, and blending modes.	2
4	Learn layout, typography, and imagery to effectively communicate the event's message create a poster for an upcoming event	2
5	Create effectively visualize data and information using icons, charts, and illustrations.	2
6	Designing a logo for a fictional company or organization using vector graphics.	2
7	Experiment with different fonts, sizes, weights, and alignments to convey a specific message (Like holiday package, sport event, Music Event etc.)	2
8	Design a set of branding collateral (business card, letterhead, envelope) for a fictional company	2
9	Design Professional Brochure for fictional company.	2
10	Create Stationary Design.	2
11	Design Product Advertisement graphics.	2
12	Implement Different types of illustrations using pen tool.	2
13	Design Various styles of icons.	2
14	Design packaging for a product of their choice using graphics software They should consider factors such as branding, product visibility, and practicality in their design.	2
15	Creating graphics for social media posts (e.g., Instagram, Facebook).	2

16	Develop a complete brand identity package for a startup, including a logo, business cards, letterheads, and social media graphics.	2
17	Combine multiple images seamlessly and adjust lighting and color to create a cohesive composition.	2
18	These assignments cover a range of graphic design skills and applications, allowing students to develop their creativity and proficiency with various design tools.	2
19	Design Mobile App using Artboard tool.	2
20	Create Responsive website layouts using different types of screen sizes.	2
21	Project	20

Reference Books:

1. Adobe Illustrator Classroom in a Book: The Official Training Workbook from Adobe, by Brian Wood. 2023.
2. Graphic Design For Everyone by Cath Caldwell, DK Publisher, 2019.

Semester: FOURTH

Syllabus
Semester-IV

Course code: SCA41MML204	**Course name:** Advance Texture Painting	
Course category: Major Mandatory		
Credits: 2	**Teaching Scheme:** L-2 P-0	**Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Basic Knowledge of 3D Modeling.		
Course Objectives:		
To impart basic introduction to Game Texturing Pipeline, Texture Pipeline for Movies, Filters, Applying a Filter, fundamental about Generators and Low Poly and High Poly Workflow.		
Course Outcomes: At the end of the course, the students will be able to -		
CO1: Bridge the fundamental concepts of Texturing Pipeline with the present level of		
Knowledge of the students.		
CO2: Student will develop a vocabulary of key terms related to the Texture Pipeline		
CO3: Familiarize Filters, Applying a Filter, fundamental about Generators		
CO4: Introduction to Low Poly and High Poly Workflow.		

Contents -

Unit	Content	Teaching hours
1	**Texture Painting Basics** What Is UV Mapping?, Texture Pipeline for Movies, Texture Pipeline for Games, Texturing Using 3D Painting Applications, Texturing Using 2D Painting Application.	06
2	**Working with Procedural Maps** Filters, Applying a Filter, Commonly Used Filters, Dirt Generator, and Metal Edge Wear Generator.	08
3	**Working with Generator** Dripping Rust Generator, Launching the Renderer, Auto Stitcher, Low Poly and High Poly Workflow.	08
4	**Integration with (Advanced 3D Modeling Software)** Advanced 3D Modeling Software to Texture Painting Software Workflow, Integration with Advanced 3D Modeling Software, Exporting from (Texture Painting Software) for Use in Advanced 3D Modeling Software.	08

Text Books :

1. Beginning PBR Texturing : Learn Physically Based Rendering with Adobe's Substance Painter by Abhishek Kumar , First Edition, Apress Publishers
2. Realistic Asset Creation with Adobe Substance 3D, by Zeeshan Jawed Shah, Packt Publishing Limited

Reference Books:

1. Creating Games with Unity, Substance Painter, & Maya by Jingtian Li, Adam Watkins, Kassandra Arevalo, Matthew Tovar , CRC Publications.
2. Digital Texturing & Painting, Owen Demers, Christine Urszenyi, New rider publisher.

Syllabus
Semester-IV

Course code: SCA41MML205		**Course name:** Advanced Character Animation
Course category: Major Mandatory		
Credits: 2	**Teaching Scheme:** L-2 P-0	**Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Basics of Graphics Software.		
Course Objectives:		
Creating motion using keyframes, understand importing and creating elements, Creating and using animation. Working with symbols.		
Course Outcomes: At the end of the course, the students will be able to -		
CO1: To learn basic 2D Animation, character animation.		
CO2: Understand Interactive application.		
CO3: Design animating banners for websites		
CO4: Publishing animated files.		

Contents -

Unit	Content	Teaching hours
1	**Advanced Animation Techniques** **Advanced Timeline Management** Exploring timeline features, Working with nested timelines Utilizing frame labels and markers **Rigging and Character Animation** Bone tool and Inverse Kinematics (IK), Character rigging best practices, Advanced character animation techniques **Advanced Motion Tweens** Custom easing and motion paths, Utilizing the motion editor for precise control, Integrating 3D rotation and scaling. **Shape Morphing** Creating shape tweens for morphing effects, Fine-tuning morphing animations, Applying morphing to text and vector graphics.	06
2	**Interactive and Dynamic Content** **Advanced Character Rigging and Animation** In-depth exploration of the Bone tool and Inverse Kinematics (IK), Rigging complex characters with multiple joints and deformers, Creating expressive facial animations with advanced rigging techniques. **Creating Interactive Interfaces** Designing buttons and interactive elements, Implementing rollover and click animations, Integrating audio and video controls. **Mastering Motion Tweening** Custom easing and advanced motion paths for smoother, animations, Incorporating 3D rotation, scaling, and skewing for dynamic effects, Fine-tuning animations using the Motion Editor for precise control.	08
3	**Advanced Multimedia Integration** **Audio and Video Integration** Syncing animations with audio, Incorporating video elements, Advanced audio and video editing within 2D Animation Software.	08

	Particle Systems and Special Effects Creating particle effects for dynamic animations, Exploring advanced filter and blending options, Implementing special effects for a visually appealing output	
4	**Exporting and Publishing** Exporting animations in various formats (HTML5, GIF, video), Implementing responsive design principles, Publishing to different platforms (web, mobile, social media) **Advanced Project Workflow** Collaborative workflows in 2D Animation Software, Version control and file management, Best practices for efficient project organization	08

Text Books :
1. Adobe Animate Classroom in a Book by Russell Chun, Adobe Press, 2015 2. Adobe Animate CC: Learn by Video (2015 release) by Joseph Labrecque, Rob Schwartz, Russell Chun , Adobe Press
Reference Books:
1. Beginning Adobe Animate CC, TOM GREEN, Joseph Labrecque, 2017, Apress publisher. 2. Tradigital Animate CC, Stephen Brooks, CRC Press.

Syllabus
Semester-IV

Course code: SCA41MML206	**Course name:** User Experience (UX) & User Interface (UI) Design	
Course category: Major Mandatory		
Credits: 2	**Teaching Scheme:** L-2 P-0	**Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Basic knowledge of Graphic Design & Design Principals.		
Course Objectives:		
The basic objective of User Experience & User Interface Design is to Design user friendly simple, functional website And Mobile Apps.		
Course Outcomes: At the end of the course, the students will be able to -		
CO1: Understand the concept of User Experience Design, solve problems using UX Techniques, Structure and manage the User Requirements for Projects.		
CO2: Learn to create personas, journey maps, Empathy map, and wireframes.		
CO3: Students efficiently use Design principles when design user interface for websites or mobile apps.		
CO4: Mockup design for mobile apps.		

Contents -

Unit	Content	Teaching hours
1	**Basics of User Experience Design** Define Experience Design, UXD Myths, Need of User Experience Design, Definition, Advantages of UXD, UXD Strategy, Project Objective and Approach, Business Requirements, UXD Elements, characteristics of UXD.	06
2	**Research Using UX Process** Exploring the problem, generating ideas, Refining solution, User Research: User interviews, Contextual inquiry, survey, focus group, card sorting, Research Techniques, Personas: what are Personas, why create personas, finding information for personas, Empathy map.	08
3	**Generating Ideas, Content Management, Business Requirement & Solution to Prototype:** Better Deliverables. Defining to Design, Design principles, Information Architecture, Wireframing, Prototyping, wireframe vs Prototype Usability Testing, feedback.	08
4	**The Importance & Principals of User Interface** Defining the User Interface, Importance of good design, Graphical User Interface, Screen Design, color theory, Typography, Imagery, Emphasis, Balance, Alignment, Contrast, Repetition, color, space, Proximity, Hierarchy, Naturalness, Consistency, Friendliness, Clarity, Interaction, Transparency. **Elements of user interface design:** Input controls, Components, other components.	08

Text Books:
1. A Project Guide to UX Design by Russ Unger and Carolyn Chandler, Second Edition New Riders publication.
2. The Essential Guide to User Interface Design: An Introduction to GUI Design Principles and Techniques, Wilbert O. Galitz, third edition WILEY publication.
3. Design Thinking for Dummies by Christian Muller-Roterberg , Wiley publication.
Reference Books:
1. The UX Design Field Book, Doug Collins, 2022.
2. UI/UX Design Basics and Fundamentals, John RICHARDS, Independently Published, 2018

Syllabus
Semester-IV

Course code: SCA41MMP203 **Course name:** Practical Based on Advance Texture painting **Course category:** Major Mandatory		
Credits: 1	**Teaching Scheme:** L-0 P-2	**Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Basic Knowledge of 3D modeling Software		
Course Objectives:		
To study Texturing Pipeline, Texturing Using 2D Painting Application, Filter, Integration between (Texture Painting Software and Advanced 3D Software)		
Course Outcomes: At the end of the course, the students will be able to -		
CO1: Student will develop a vocabulary of key terms related to the Texture Painting.		
CO2: Integration between (Texture Painting Software) and (an advanced 3D software).		
CO3: Understanding the workflow of advance 3D modeling.		
CO4: Working with tools.		

Content -

Sr.no.	Description of Practical	Practical Hours
1	Understanding the Texturing Pipeline	2
2	Design Optimized UV Mapping pipeline	2
3	Creating compatible and clear UV Maps	2
4	Exporting 3d model from advanced 3d modeling software and Importing the Model	2
5	Creating and Applying a Filter	2
6	Understanding Generators	2
7	Exploring and Understanding the process of Rendering	2
8	Understanding Low Poly and High Poly Workflow	2
9	Painting texture on complex 3d Model (example : Car, Gun, Watch)	2
10	Integration with advanced 3D modeling software	2
11	Project	10

Reference Books:

1. Beginning PBR Texturing: Learn Physically Based Rendering with Adobe's Substance Painter by Abhishek Kumar, First Edition, and Apress Publishers.
2. Realistic Asset Creation with Adobe Substance 3D, by Zeeshan Jawed Shah, Packt Publishing.

Syllabus
Semester-IV

Course code: SCA41MMP204 **Course name:** Practical Based on Advanced of Character Animation **Course category:** Major Mandatory
Credits: 1 **Teaching Scheme:** L-0 P-2 **Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Basic Knowledge of Graphics & Image Editing Software.
Course Objectives:
Students will acquire proficiency in animation, graphic design, and interactive content creation. They will develop skills in storyboarding, use of the timeline, and exporting animations in various formats.
Course Outcomes: At the end of the course, the students will be able to -
CO1: To learn basic 2D Animation, character animation.
CO2: Design animating banners for websites.
CO3: Understanding Character Animation.
CO4: Learn apply audio clips between character animation.

Content -

Sr.no.	Description of Practical	Practical Hours
1	To draw a basic 2D Animation character using different tools	2
2	Illustrate the concept of shape morphing by animating the transformation of one shape into another.	2
3	Animate ball bouncing animation using motion tween	2
4	Use to import Graphic design software or .eps file and animate it	2
5	To animate car using different PNG	2
6	Object Interaction: Illustrate the interaction between two objects, such as a ball bouncing off a wall or a character picking up an item.	2
7	Simple Pendulum Swing: Teach the principles of pendulum motion and easing by animating a swinging pendulum.	2
8	Animating Expressions: Have students animate a character's facial expressions, conveying different emotions.	2
9	Animating a Butterfly Flutter: Focus on creating a delicate and realistic motion by animating the fluttering of a butterfly's wings.	2
10	Lip Syncing Exercise: Introduce the principles of lip syncing by animating a character speaking or singing to a provided audio clip.	2
11	Project	10

Reference Books:

1. Adobe Animate Classroom in a Book by Russell Chun, Adobe Press, 2015.
2. Adobe Animate CC: Learn by Video (2015 release) by Joseph Labrecque, Rob Schwartz, Russell Chun, Adobe Press.

Syllabus
Semester-IV

Course code: SCA41SEP201		**Course name:** Sound Editing
Course category: Skill Enhancement Course		
Credits: 2	**Teaching Scheme:** L-0 P-4	**Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Basic Knowledge of Characteristics of Sound.		
Course Objectives:		
To understand how to edit sound and remove noise from sound.		
Course Outcomes: At the end of the course, the students will be able to -		
CO1: To Learn Sound Editing techniques.		
CO2: Apply Sound mixing, Sound noise, Sound file formats etc.		
CO3: Understanding different types of sound format.		
CO4: Learn sound effects.		

Contents -

Sr. no.	Description of Practical	Practical Hours
1	To Learn software workspace.	2
2	Study the tools of Sound Editing Software.	2
3	Implement audio cutting and adjusting techniques.	2
4	Perform Basic sound editing operations.	2
5	Understanding the process of Import Audio Files.	2
6	Study how to Record Audio.	2
7	To study how to Copying, Cutting and Pasting Audio	2
8	Adding Background Music and Other Media Files.	2
9	To study the adjusting volume with keyframe.	2
10	Working With the Effects Rack.	2
11	Edit audio using Time Stretching	2
12	Apply audio using the Multitrack Mixer.	2
13	Study how to record audio in software.	2
14	To create audio by using Pitch Correction.	2
15	Manipulate Noise Reduction from sound.	2
16	To study the Restoration Effects of sound.	2
17.	Apply Looping (Fade in – Fade out) effect	2
18.	Create Remixing of audios.	2
19.	To create audio by using Audio Effects.	2
20.	Exporting sound files in different types of Formats.	2
21	Project.	20

Reference Books :

1. Adobe Audition CC Classroom in a book Adobe Creative Team (Author), Maxim Jago (Author) in a Book Second Edition.
2. Using Audition by Dabbs Ron, McGraw-Hill Education publisher.

Semester: FIFTH

Syllabus
Semester-V

Course code: SCA41MML301 **Course name:** 3D Design and Visualization **Course category:** Major Mandatory		
Credits: 2	**Teaching Scheme:** L-2 P-0	**Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Basic of 3D Modeling and Animation.		
Course Objectives:		
The basic objective is to be able to create, edit, and analyze 3D models. Development of modeling, texturing and rendering.		
Course Outcomes: At the end of the course, the students will be able to -		
CO1: Learn to User interface and Navigation.		
CO2: To create 3D Objects.		
CO3: Understanding the process of texturing.		
CO4: Understand how to render 3D animation.		

Contents -

Unit	Content	Teaching hours
1	**Interface:** Exploring the Interface, Controlling and Configuring the Viewports, Working with Files, Importing, and Exporting files, User Preference Window Moving in 3D Space, Panels **Create & Edit Objects:** Creating and Editing Primitive Objects, Selecting Objects and Using Layers Transforming Objects, Pivoting, Aligning, and Snapping, Cloning Objects and Creating Object Arrays, Grouping, Linking, and Parenting Objects, Accessing Sub Objects and Modifiers and Using the Modifier Stack, Drawing and Editing 2D Splines and Shapes, Modeling with Polygons, Using the Graphite Modeling Tools and Painting with Objects, Working with Compound Objects, Deforming Surfaces and Using the Mesh Modifiers.	06
2	**Materials** Creating and Applying Standard Materials with the Slate Material Editor, Adding Material Details with Maps, Using Specialized Material Types, Creating Compound Materials and Using Material Modifiers.	08
3	**Textures** Unwrapping UVs and Mapping Textures. **Working with Cameras, and Lighting** Using Lights and Basic Lighting Techniques, Using the Sunlight and Daylight Systems, Working with Advanced Lighting.	08
4	**Animating Objects and Rendering a Scene** Understanding Animation and Keyframes, Animating with Constraints and Simple Controllers, Render Settings, Rendering a JPEG Image, Creating a Video Clip	08

Text Books :
1. Autodesk 3ds Max 2014 Bible by Kelly L. Murdock 2. Autodesk 3ds Max 2021: Modeling Essentials, 3rd Edition by Pradeep Mamgain
Reference Books:
1. Autodesk 3ds Max 2024: A Comprehensive Guide, 24th Edition by Prof Sham Tickoo

Syllabus

Semester-V

Course code: SCA41MML302 **Course name:** Visual Effects **Course category:** Major Mandatory		
Credits: 2	**Teaching Scheme:** L-2 P-0	**Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Basic understanding of graphic design principles (optional but helpful). Familiarity with video editing software basic computer proficiency, including file management and system navigation.		
Course Objectives:		
To introduce the fundamentals of motion graphics and visual effects Equip students with the skills to create professional animations, text effects, and motion graphics and to teach advanced features such as motion tracking, 3D animations, and compositing techniques.		
Course Outcomes: At the end of the course, the students will be able to -		
CO1: Understand the interface, tools, and features of Software.		
CO2: Create professional-quality animations, motion graphics, and visual effects.		
CO3: Apply motion tracking, compositing, and 3D layer animations in projects.		
CO4: Render and export projects optimized for various platforms, including web, broadcast, and social media.		

Contents -

Unit	Content	Teaching hours
1	**Introduction** Focuses on understanding the interface, basic tools, and workflow, creating compositions, working with layers and animating properties like position and opacity, logo animation.	06
2	**Animation and Intermediate Techniques** Motion using keyframes, graph editor, text animations, kinetic typography. 3D layers, cameras, lights, and intermediate effects like masks and track mattes, culminating in a 10-second animated typography project.	08
3	**Advanced Features and Visual Effects** Introduces expressions, motion tracking, and compositing techniques like rotoscoping and Chroma keying, Rendering practices, 15-second VFX sequence combining motion tracking and effects will complete this unit.	08
4	**Advanced Motion Graphics** Final Project emphasizes advanced animation techniques, character rigging, and plugins like Element 3D, Rendering final video into different format.	08

Reference Books:
1. Adobe After Effects CC Classroom in a Book by Lisa Fridsma, Brie Gyncild.
2.Adobe After Effects CC Visual Effects and Compositing: Studio Techniques by Mark Christiansen

Syllabus
Semester-V

Course code: SCA41MML303 **Course name:** Rotoscope Animation **Course category:** Major Mandatory		
Credits: 2	**Teaching Scheme:** L-2 P-0	**Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Basic knowledge of animation.		
Course Objectives:		
The basic objective is to introduce students with various elements of Rotoscoping and Tracking.		
Course Outcomes: At the end of the course, the students will be able to -		
CO1: To Learn basics of rotoscoping.		
CO2: Learn user Interface.		
CO3: Different tools and their workings.		
CO4: Understand how to render final output.		

Contents -

Unit	Content	Teaching hours
1	**Introduction to rotoscoping** Rotoscoping basics, Essentials of rotoscoping, Fundamentals of rotoscoping **Introduction to fusion workspace** Workflow, Customizing your workspace, Setting up a project.	06
2	**The workspace layout** Flow area, Console , Timeline , Spline editor **Tools and Timeline** Introduction to Tool panel, Layouts, Introduction to Timeline, Time codes, types of rotoscope techniques, keyframe and masking, effects	08
3	**Importing footage** Introduction to loader, Importing and interpreting video and audio Working with footage items, Preparing and importing still images	08
4	**Rendering and Exporting** Basics of rendering, How to render files in different formats, Render settings	08

Reference Books:
1. VFX Fundamentals: Visual Special Effects Using Fusion 8.0
2. Rotoscoping, Bratt Benjamin, Focal Press

Syllabus
Semester-V

Course code: SCA41MMP301 **Course name:** Practical Based on 3D Design and Visualization **Course category:** Major Mandatory
Credits: 1 **Teaching Scheme:** L-0 P-2 **Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Basics Knowledge of Graphics and 3D Animation Software.
Course Objectives: Design 3D Models and 3D animations.
Course Outcomes: At the end of the course, the students will be able to -
CO1: Designing a 3D Model.
CO2: Understanding of lighting concepts.
CO3: Creating an Image based render.
CO4: Understanding render setup.

Content -

Sr.no.	Description of Practical	Practical Hours
1	Creating and editing primitive objects	2
2	Understanding modeling with polygons	2
3	Learning grouping, linking, and parenting objects	2
4	Understanding Modifiers	2
5	Creating and applying materials	2
6	Learning the sunlight and daylight systems	2
7	To configure and aim cameras	2
8	Learning animation and keyframes	2
9	Procedure to render a scene	2
10	To Study how to render a video	2
11	Project	10

Reference Book:

1. Autodesk 3ds Max 2024: A Comprehensive Guide, 24th Edition by Prof Sham Ticko.
2. Autodesk 3ds Max 2021: A Detailed Guide to Arnold Renderer by Pradeep Mamgain.

Syllabus
Semester-V

Course code: SCA41MMP302 **Course name:** Practical Based on Visual Effects **Course category:** Major Mandatory		
Credits: 1	**Teaching Scheme:** L-0 P-2	**Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Basic Computer Skills: Ability to navigate file systems and manage digital assets. Fundamental Design Knowledge: Familiarity with concepts like color theory, typography, and layout		
Course Objectives:		
To introduce learners to the core tools and workflow of software through hands-on practice to develop proficiency in creating animations, text effects, and motion graphics by working on real-world projects, advanced techniques such as 3D layers, motion tracking, and compositing through practical exercises, emphasize the importance of creative storytelling and design principles in motion graphics.		
Course Outcomes: At the end of the course, the students will be able to -		
CO1: Demonstrate the ability to navigate the interface and efficiently use its tools.		
CO2: Create professional animations and visual effects by applying learned techniques to practical tasks.		
CO3: Experiment with advanced features like motion tracking, expressions, and 3D space to enhance their projects.		
CO4: Build a portfolio showcasing a range of practical projects, including animated text, motion graphics, and visual effects.		

Content -

Sr.no.	Description of Practical	Practical Hours
1	Shoot a video with a green screen background and replace it with a digital environment using compositing software Keying.	2
2	Isolate a moving object or character from a video clip using rotoscoping techniques.	2
3	Create a double role video using masking.	2
4	Track camera motion in live-action footage and integrate a 3D object into the scene.	2
5	Design and integrate a digital environment or background into a live-action scene. Digital Matte Painting.	2
6	Convert a daylight scene into nighttime using color grading and lighting effects.	2
7	Develop a complete VFX sequence integrating modeling, animation, compositing, and effects.	2
8	Simulate an explosion or destruction effect (e.g., building collapse) using dynamics and particles.	2
9	Create a realistic particle effect like rain, smoke, or fire using simulation tools.	2
10	Develop a complete VFX sequence integrating modeling, animation, compositing, and effects.	2
11	Optimize workflows and integrate learned skills into a 30-second final project, showcasing their mastery.	10

Reference Books:

1. Adobe After Effects CC Classroom in a Book by Lisa Fridsma, Brie Gyncild.
2. Adobe After Effects CC Visual Effects and Compositing: Studio Techniques by Mark Christiansen.

Syllabus
Semester-V

Course code: SCA41MEL301	**Course name:** Virtual Reality	
Course category: Major Elective		
Credits: 3	**Teaching Scheme:** L-3 P-0	**Evaluation Scheme:** CA-60 ESE-40
Pre-requisites: Basics of Graphics and 3D Software.		
Course Objectives:		
Understanding Concept of virtual reality and its working also describes the Fundamentals of sensation, perception, technical aspects of virtual reality systems.		
Course Outcomes: At the end of the course, the students will be able to -		
CO1: Understand the design and implementation of the hardware that enables VR systems to be built.		
CO2: Describe the importance of interaction and audio in VR systems.		
CO3: Study Timeline and movie clips.		
CO4: Analyze Secondary color correction.		

Contents -

Unit	Content	Teaching hours
1	**Introduction:** Definition of VR, modern experiences, historical perspective, Hardware, sensors, displays, software, virtual world generator, game engines, human senses, perceptual psychology, psychophysics.	09
2	**The Geometry of Virtual Worlds & Light and Optics:** Geometric modeling, transforming rigid bodies, yaw, pitch, roll, axis-angle representation, quaternions, 3D rotation inverses and conversions, homogeneous transforms, transforms to displays, look-at and eye transforms, canonical view and perspective transforms, viewport transforms.	09
3	**The Physiology of Human Vision & Visual Perception:** Parts of the human eye, photoreceptors and densities, scotopic and photopic vision, display resolution requirement, eye movements, neural vision structures, sufficient display resolution, and other implications of physiology on VR, Depth perception, motion perception, vection, stroboscopic apparent motion, and color perception.	09
4	**Visual Rendering & Motion in Real and Virtual Worlds:** Graphical rendering, ray tracing, shading, BRDFs, rasterization, Barycentric coordinates, elocities, acceleration, vestibular system, virtual world physics, simulation.	09
5	**Visual Rendering & Motion in Real and Virtual Worlds:** Graphical rendering, ray tracing, shading, BRDFs, rasterization, barycentric coordinates, elocities, acceleration, vestibular system, virtual world physics, simulation.	09

Text Books :
1. Virtual Reality, Steven M. LaValle, Cambridge University Press.

Syllabus
Semester-V

Course code: SCA41MEL302	**Course name:** Basics of Cinematography & Lights	
Course category: Major Elective		
Credits: 3	**Teaching Scheme:** L-3 P-0	**Evaluation Scheme:** CA-60 ESE-40

Pre-requisites: Basics Understanding of Camera operations and knowledge of Audio & Video Software

Course Objectives:

Convey the narrative through visual elements like composition, camera angles, and movement. Maintain visual coherence across scenes.

Course Outcomes: At the end of the course, the students will be able to -

CO1: Utilize various lighting setups, such as three-point lighting, natural light, and creative lighting, to suit different scenarios.

CO2: Apply principles of visual composition, such as the rule of thirds, leading lines, and depth, to create balanced and engaging frames.

CO3: Execute dynamic camera movements (e.g., panning, tracking and handheld) to enhance storytelling.

CO4: Understand how cinematography and lighting decisions affect color grading, editing, and overall visual continuity.

Contents -

Unit	Content	Teaching hours
1	**Basics of Cinematography, Visual Language and Language of the lens** Writing with motion, frame as definition, view of the lens, color and light, visual texture, Movement, point-of –view, Design Principals, overlap, sinuous line, compositional triangles, frame basics, rule of third, lens perspective, deep focus, compression of space, manipulating perspective, selective focus, image control at the lens.	09
2	**Visual storytelling, Coverage and Continuity, Camera & sensors** Visual Metaphor, stories with pictures, lightning as storytelling, film noir, light and shadow, Cinematic basics, static frame, building blocks of scenes, Character Shots, Invisible techniques, Shooing methods, Montage, Continuity and types of continuity, color terminology, Digital signal path, HD recording, RAW Vs. Baked, Digital Negative, Pixels, Digital sensors, Shutters.	09
3	**Measurement, Exposure, Linear, gamma, log** Waveform monitor, Color bars, vectorscope**,** video test card, Calibration test charts, Image resolution, Exposure theory, element of exposure, response curve, types of exposure, tools of exposure, Dynamic range ,film gamma and video gamma, Inefficiency of linear, log encoding, log curves.	09
4	**Image Control & Grading, Tools of lighting, Lightning basics** At the dit cart, Color correction and color grading, controllers, control surfaces, control parameters, Exporting and reusing, luts and looks, Converse Filters, tools of lightning, Fundamentals of lightning, Lightning techniques, principals of lightning. Day Exteriors.	09
5	**Optics & Focus, Camera movement** Physical basics of optics, focus, Depth-of-field, macrophotography, Lens Extenders, filters factors, Lens care, Camera movement in filmmaking, basic technique, types of move, moving shots, camera support for movements, Camera Mounts	09

Text Books :
1. Digital Cinematography by Wheeler Paul, Taylor & Francis Ltd publisher.
2. Understanding Cinematography by Hall Brian , The Crowood Press Ltd.
Reference Books:
1. Cinematography theory and practice for cinematographers & Directors by blain Brown, A Focal Press book
2. Basic Cinematography by Lancaster Kurt , Taylor & Francis Inc.

Syllabus
Semester-V

Course code: SCA41MEP301 **Course name:** Practical Based on Virtual Reality		
Course category: Major Elective		
Credits: 1	**Teaching Scheme:** L-0 P-2	**Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Basics Knowledge of 3D Designing		
Course Objectives: Understanding Concept of virtual reality and its working also describes the		
Fundamentals of sensation, perception, technical aspects of virtual reality systems.		
Course Outcomes: At the end of the course, the students will be able to -		
CO1: Understand the design and implementation of the hardware that enables VR systems to be built.		
CO2: Describe the importance of interaction and audio in VR systems.		

Content -

Sr.no.	Description of Practical	Practical Hours
1	Create a virtual environment for any use case. The application must include at least 4 scenes which can be changed dynamically, a good UI, animation and interaction with objects. Mini project consist of theoretical understanding implements with suitable mini project.	30

Text Books :
1. Virtual Reality, Steven M. LaValle, Cambridge University Press.
Reference Books:
1.Understanding Virtual Reality: Interface, Application and Design, and Alan B Craig, (The Morgan Kaufmann Series in Computer Graphics)".San Francisco, CA William R Sherman, Morgan Kaufmann Publishers.

Syllabus
Semester-V

Course code: SCA41MEP302 **Course name:** Practical Based on Basics of Cinematography & Lights
Course category: Major Elective
Credits: 1 **Teaching Scheme:** L-0 P-2 **Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Basics of Visual Effects.
Course Objectives:
To study the workflow, create a project, Understand and explore software rendering to render an output in the form of a video.
Course Outcomes: At the end of the course, the students will be able to -
CO1: Learn to create Camera Movement and the Immersive Long Take, Digital Movement.
CO2: Students efficiently use Varieties of Aesthetic Immersion, Simulation and its Discontents.
CO3: Understanding audio editing techniques.
CO4: Learn Chroma keying process.

Content -

Sr.no.	Description of Practical	Practical Hours
1	To Study Different Camera angles to shot cinematic videos.	2
2	To Study Different Cinematic Cameras Used to shot cinematic videos	2
3	To Study different gadgets used for shooting high quality audio and video.	2
4	To Study different lights and filters used for high quality lighting effects.	2
5	Apply options available for audio editing	2
6	Implement digital movements for objects	2
7	To study and understand different types color correction workflows	2
8	Conversion of different video formats	2
9	Understand and study chroma keying process	2
10	To study process of Render a video	2
11	Project	10

Text Books :
1. Digital Cinematography by Wheeler Paul, Taylor & Francis Ltd publisher. 2. Understanding Cinematography by Hall Brian , The Crowood Press Ltd
Reference Books:
1. Cinematography theory and practice for cinematographers & Directors by blain Brown, A Focal Press book
2. Basic Cinematography by Lancaster Kurt , Taylor & Francis Inc.

Syllabus
Semester-V

Course code: SCA41VSP301 **Course name:** Rotoscope using tracking **Course category:** Vocational skill Course		
Credits: 2	**Teaching Scheme:** L-0 P-4	**Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Basic knowledge of video editing software		
Course Objectives:		
Teach core concepts of rotoscoping and VFX tracking, isolating subjects and tracking motion, hands-on experience with industry-standard VFX tools, and seamless integration of VFX into live-action footage, Foster creativity in visual storytelling using VFX.		
Course Outcomes: At the end of the course, the students will be able to -		
CO1: Perform advanced rotoscoping and motion tracking.		
CO2: Create professional VFX using industry tools.		
CO3: Design and composite VFX into live-action videos.		
CO4: Build a portfolio showcasing VFX skills.		

Contents -

Sr.no.	Description of Practical	Practical Hours
1	Basic Shape Rotoscoping – Isolate simple geometric objects from a background.	2
2	Human Silhouette Rotoscoping – Cut out a person from a video with minimal motion.	2
3	Hair and Fine Detail Rotoscoping – Rotoscope hair or transparent fabrics using feathering and edge refinement.	2
4	Motion Blur Rotoscoping – Handle fast-moving objects with motion blur.	2
5	Green Screen Cleanup – Rotoscope parts missed during chroma keying.	2
6	Edge Matte Refinement – Smooth and refine jagged edges in complex mattes.	2
7	Complex Shape Rotoscoping – Isolate moving objects with irregular shapes.	2
8	Foreground-Background Separation – Rotoscope overlapping subjects in the frame.	2
9	Animated Masking – Animate masks to follow moving objects frame by frame.	2
10	Depth Matte Creation – Create multiple mattes to separate background, midground, and foreground elements.	2
11	Basic 2D Tracking – Track a simple object's motion and attach text or graphics.	2
12	Corner Pin Tracking – Replace a screen on a mobile phone or TV using corner pinning.	2
13	Planar Tracking – Track and insert images onto walls or floors with perspective changes.	2
14	Camera Tracking (Matchmoving) – Track camera motion to integrate 3D objects into live footage.	2
15	Object Tracking – Track moving 3D objects and composite elements on them.	2
16	Tracking in Low Light – Track footage with poor lighting or grainy quality.	2
17.	Occlusion Handling in Tracking – Handle situations where the tracked object is partially hidden.	2

18.	Stabilizing Shaky Footage – Use tracking data to stabilize handheld footage.	2
19.	Shadow and Light Matching – Use tracked data to match lighting for inserted VFX elements.	2
20.	Advanced Motion Tracking with VFX Integration – Combine tracking data with VFX (e.g., explosions, holograms).	2
21	Create a dynamic sci-fi action sequence blending live-action footage with VFX elements. The project will focus on advanced rotoscoping for subject isolation and VFX tracking to integrate futuristic effects like holograms, energy blasts, and environment extensions.	20

Reference Books:
1. Rotoscoping: Techniques and Tools for the Aspiring Artist by Benjamin Bratt
2. Matchmoving: The Invisible Art of Camera Tracking by Tim Dobbert

Semester: SIXTH

Syllabus
Semester-VI

Course code: SCA41MML304	**Course name:** Video Editing	
Course category: Major Mandatory		
Credits: 2	**Teaching Scheme:** L-2 P-0	**Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Basic knowledge of video editing.		
Course Objectives:		
To understand the basic elements used in video editing.		
Course Outcomes: At the end of the course, the students will be able to -		
CO1: Learn User interface.		
CO2: Understand how to import media and organize them.		
CO3: Edit video using different tools and effect.		
CO4: Learn how to render final output.		

Contents -

Unit	Content	Teaching hours
1	**Interface :** The workspace layout, Customizing your workspace, Setting up a project, Setting up a sequence. **Importing Media :** Getting started, Importing assets, Working with the Media Browser, Importing images, The media cache	06
2	**Organizing Media :** Getting started, The Project panel, Working with bins, Organizing media with content analysis, Monitoring footage, Modifying clips **Essentials of video editing :** Using the Source Monitor, Navigating the Timeline, Essential editing commands	08
3	**Working with clips and markers :** Program Monitor controls, Controlling resolution, Using markers, Using Sync Lock and Track Lock, Finding gaps in the Timeline, Moving clips **Adding transitions :** Transition basics , Edit points and handles, Adding video transitions, Using A/B mode to fine-tune a transition, Adding audio transitions	08
4	**Advanced editing techniques :** Retiming clips, Replacing clips and footage, Advanced trimming. **Adding Audio & video effects :** Setting up the interface to work with audio, Examining audio characteristics, Adjusting audio volume, Adjusting audio gain, Creating a split edit, Working with video effects, Key framing effects, Effects presets **Exporting frames, clips, and Sequences :** Overview of export options, Exporting single frames, Exporting a master copy, Working with Adobe Media Encoder, Exchanging with other editing applications	08

Reference Books:

1. Premiere Pro Editing Workshop, Publisher: Taylor & Francis Ltd.

Syllabus
Semester-VI

Course code: SCA41MML305 **Course name:** Digital Sculpting **Course category:** Major Mandatory		
Credits: 2	**Teaching Scheme:** L-2 P-0	**Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Basic of 3D Modeling		
Course Objectives:		
The basic objective is to be able to create, edit, and sculpt 3D models. Development of sculpting and rendering.		
Course Outcomes: At the end of the course, the students will be able to -		
CO1: Learn to tools of sculpting.		
CO2: Create 3D Objects.		
CO3: Understanding the process of sculpting.		
CO4: Understand how to render Sculpted 3D Models.		

Contents -

Unit	Content	Teaching hours
1	**Interface:** Exploring Blender's User Interface for Sculpting, **Overview of Blender's Sculpting Workflows:** Creating dynamic topology with Dyntopo, Using the Voxel Remesher in a low-to-high detail workflow, Exploring the most powerful sculpting mode – Multire solution	06
2	**Sculpting a Simple Character Head with Basic Brushes** Creating the large forms with Grab brush, Smoothing the lumpy and jagged surfaces, Inflate brush, Adding detail with Crease brush, Draw Sharp brush and Pinch brush. **How to Make a Base Mesh for a 3D Sculpture** Using the Skin modifier, Using Metaballs, Importance of Booleans, Using the Lasso Trim tool	08
3	**Learning the Power of Subdivision and the Multiresolution Workflow** Generating quad mesh with QuadriFlow, Exploring subdivision surfaces, Understanding multiresolution modifier, **Using Advanced Features and Customizing the Sculpting Brushes** Using custom falloff, Exploring custom stroke options, Setting up custom alpha textures, Using face sets as automatic masks, the Line Project tool, Posing fingers with the Pose brush	08
4	**Making Accessories** Vertex Painting, Using Mask Extract, Using the Cloth brush, Using the Cloth Filter, Preparing mesh cloth simulation, Simulating cloth to wrap around a character, Sculpting with Radial Symmetry **Creating and Understanding Hair tools** Hair particles, Adding surface details, Creating long flowing hair with curves Rendering Sculptures for Your Portfolio	08

Reference Books:

1. Sculpting the blender way by Xury Greer, Packt Publishing Ltd.

Syllabus
Semester-VI

Course code: SCA41MML306 **Course category:** Major Mandatory	**Course name:** Motion Graphic Design	
Credits: 2	**Teaching Scheme:** L-2 P-0	**Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Knowledge of Composition and animation Principals.		
Course Objectives:		
This course has several different approaches to animation with respect to advanced movement to tell stories and deliver massage while maintaining a well-designed approach		
Course Outcomes: At the end of the course, the students will be able to -		
CO1: Creating motion graphics that effectively convey messages and narratives.		
CO2: Ability to manage motion graphics projects from concept to final output.		
CO3: Coordinating movements and live action.		
CO4: Understanding animation principles such as timing, easing, and storytelling.		

Contents -

Unit	Content	Teaching hours
1	**Motion Graphics: A perspective, History of Motion Graphics** What is Motion Graphics-Introduction, Difference between Motion Graphics and Animation, Motion Graphics and visual effects, Benefits of Motion Graphics, Brief history of motion Graphics, Motion Graphics in film and Television, Early cinematic Invention, Experimental Animation	06
2	**Motion Graphics in Film and Television, Interactive Media and Environments** Film titles, Network Branding, Commercial, Public service announcements, and Difference Interactive media, Motion over web and Multimedia, Animated Exteriors, Digital Signage.	08
3	**Choreographing Movement, Live-Action ,Image and other consideration** Language of Motion, Motion Literacy, coordinating movements, Spatial Consideration, Temporal properties, Visual Properties, Image consideration live- Action consideration , typographic consideration, Pictorial and Sequential composition	08
4	**Conceptualization, Animation process** assessments regarding audience, research topic, restrictions, Formulation of Idea, Cultivation, Story Board, Animatic, Frame by frame, Interpolation Spatial Interpolation, Visual interpolation, Temporal interpolation, Motion graphic compositing, Motion Graphics Sequencing.	08

Reference Books:

1. Motion Graphics Design: Applied History and Aesthetics, Jon Krasner, Focal Press
2. Motion Graphics, Crook Ian University of Central Lancashire, Bloomsbury Publishing PLC

Syllabus
Semester-VI

Course code: SCA41MMP303 **Course name:** Practical Based on Video Editing **Course category:** Major Mandatory
Credits: 1 **Teaching Scheme:** L-0 P-2 **Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Basic knowledge of video editing.
Course Objectives:
To understand the basic elements used in video editing
Course Outcomes: At the end of the course, the students will be able to -
CO1: Learn User interface.
CO2: Understand how to import media and organize them.
CO3: Edit video using different tools and effect.
CO4: Learn how to render final output.

Content -

Sr.no.	Description of Practical	Practical Hours
1	Organize media assets (video clips, audio files, images).	2
2	To learn tasks like cutting, trimming, and navigating the timeline.	2
3	To practice on fundamental editing techniques such as cutting, trimming, splitting clips, and arranging them on the timeline.	2
4	Practice creating smooth transitions between clips using different techniques.	2
5	Learn to adjust the speed of a clip (e.g., slow motion or fast motion).	2
6	Practice on audio quality and use it to enhance your video.	2
7	Learn how to adjust audio levels, add background music, to create atmosphere and impact.	2
8	Enhance the visual quality of your footage using basics of color correction and grading.	2
9	Learn how to add video effects and audio effects to the clips.	2
10	Add text overlays, titles, and graphics to your video to provide context, highlight key points, or add visual interest.	2
11	Project	10

Reference Books:

1. Adobe-premiere-pro-cs6-classroom-in-a-book
2. Premiere Pro Editing Workshop, Publisher: Taylor & Francis Ltd.

Syllabus

Semester-VI

Course code: SCA41MMP304 **Course name:** Practical Based on Digital Sculpting **Course category:** Major Mandatory
Credits: 1 **Teaching Scheme:** L-0 P-2 **Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Basic of 3D Modeling.
Course Objectives:
Design 3D Sculpts and Normal Maps.
Course Outcomes: At the end of the course, the students will be able to -
CO1: Design a 3D Model and an Image based render
CO2: Understanding of lighting concepts and render setup

Content -

Sr.no.	Description of Practical	Practical Hours
1	Understanding dynamic topology using Dyntopo	2
2	Modeling with Voxel Remesher	2
3	Demonstrate Grab, Inflate, Crease, Pinch Brushes	2
4	Learning about Skin modifier	2
5	Generating mesh with QuadriFlow	2
6	Learning subdivision surfaces	2
7	Understanding multiresolution modifier	2
8	Creating low poly – to – high poly detail	2
9	Understanding Vertex Painting	2
10	Design Hair particle	2
11	Project	10

Reference Books :
1. Sculpting the blender way by Xury Greer, Packt Publishing Ltd.

Syllabus
Semester-VI

Course code: SCA41MEL303 **Course name:** Augmented Reality **Course category:** Major Elective		
Credits: 3	**Teaching Scheme:** L-3 P-0	**Evaluation Scheme:** CA-60 ESE-40
Pre-requisites: Basic Knowledge of Simulation.		
Course Objectives:		
Students will learn basics of tracking, displays and sensors.		
Course Outcomes: At the end of the course, the students will be able to -		
CO1: Understanding different type's displays and tracking. Basics of Visualization.		
CO2: Basics of Camera simulation.		
CO3: Learn AR Software architecture and workspace.		
CO4: Apply collaboration system.		

Contents -

Unit	Content	Teaching hours
1	**Introduction to Augmented Reality** Brief history, applications, mixed reality continuum, virtual reality, biquitous computing. **Displays** - Multimodal displays, audio display, haptic, tactile and tangible displays Gustatory displays, visual perception, characteristics.	09
2	**Computer Vision for Augmented reality** Marker tracking, Multiple camera infrared tracking, Natural feature tracking by detection, Incremental tracking, simultaneous localization and mapping **Calibration and Registration** - Camera calibration, ,calibration, Registration, latency. Visual Coherence - Photometric registration, Common illumination, Diminished reality, Camera simulation.	09
3	**Situated visualization** - Challenges, visualization registration, Annotation and labeling, X-ray visualization, spatial manipulation, Information filtering Interaction - Output modalities, Input modalities, Tangible interfaces, Virtual user interfaces on real surfaces, Multi-view interfaces.	09
4	**Modeling and annotation** - Specifying geometry, Specifying appearance, semi-automatic reconstruction, free form modeling. Authoring - Requirement of AR authoring, elements of authoring, standalone authoring solutions, **Navigation** - Foundation of Human navigation, exploration and recovery, Route visualization, view point guidance, Multiple perspectives	09
5	**Collaboration** - Properties of collaboration system, co-located collaboration System, Remote collaboration. **Software architecture** - AR Application requirements, Software engineering requirement, data flow, scene graphs, Developer support.	09

Text Books :
1. Augmented Reality by Dieter Schmalstieg, Tobias Hollerer , Pearson publication.
2. Augmented Reality with Unity AR Foundation, Jonathan Linowes Packt Publishing Limited.
Reference Books:
1. Virtual and Augmented Reality (VR/AR), Bernhard Jung, Paul Grimm, Ralf Doerner, Wolfgang Broll 2022.

Syllabus
Semester-VI

Course code: SCA41MEL304 **Course name:** Basics of Photography **Course category:** Major Elective		
Credits: 3	**Teaching Scheme:** L-3 P-0	**Evaluation Scheme:** CA-60 ESE-40
Pre-requisites: Basic understanding of visual arts and design principles, Familiarity with using digital devices like smartphones or cameras, creative storytelling and visual expression.		
Course Objectives:		
To introduce fundamental concepts of photography, including composition, lighting, and exposure, develop technical skills in handling cameras and photography equipment, enhance creative vision and storytelling through images, post-processing techniques for image enhancement, explore various photography genres like portrait, landscape, and product photography.		
Course Outcomes: At the end of the course, the students will be able to -		
CO1: Demonstrate knowledge of camera functions and photography techniques.		
CO2: Apply principles of composition and lighting to create impactful images.		
CO3: Analyze and critique photographs based on technical and creative aspects.		
CO4: Develop a personal photography portfolio showcasing diverse styles and themes.		

Contents -

Unit	Content	Teaching hours
1	**Introduction to Photography** Fundamental concepts of photography, including its history and evolution. Students will learn about the basic principles of exposure, including shutter speed, aperture, and ISO, and how these elements work together to produce a well-exposed image, Emphasis will be placed on understanding light, both natural and artificial and how it affects photography, types of cameras, lenses, and their respective functions, along with the basic operation of a camera.	09
2	**Camera Settings and Techniques** camera settings and techniques for capturing high-quality images. Mode to control exposure settings, understanding white balance, and mastering focus techniques. Manipulating the depth of field, motion blur, and using various metering modes, Adjusting settings for different lighting conditions and subjects.	09
3	**Composition and Framing** This unit focuses on the art of composition and how to frame a photograph effectively. Key concepts such as the rule of thirds, leading lines, symmetry, and the golden ratio will be discussed in detail, balance elements within the frame to create visually compelling images, importance of perspective, viewpoint, and the use of space to convey mood and emotion in photography.	09
4	**Lighting and Exposure** Control Proper lighting is a critical component of photography, and this unit explores how to manipulate light to achieve the desired effect. Different types of lighting, including natural light, artificial light, and studio lighting setups. Techniques for controlling exposure using light modifiers, reflectors, diffusers, and filters. Students will experiment with different lighting scenarios to understand how light interacts with subjects and how to use it creatively.	09

5	**Post-Processing and Image Enhancement** Basics of photo editing and post-processing using software. Enhance images through color correction, cropping, retouching, and adjusting exposure and contrast. Non-destructive editing techniques and how to maintain the integrity of the original image while making improvements. Ethical considerations regarding image manipulation and copyright will also be discussed to ensure responsible editing practices.	09

Reference Books:
1. The Basics of Photography: The photography handbook for who beginning in photography by Rajitha Dashin, rajitha nishadh.
2. The Basic Book of Photography by Grimm Tom

Syllabus
Semester-VI

Course code: SCA41MEP303 **Course name:** Practical Based on Augmented Reality **Course category:** Major Elective
Credits: 1 **Teaching Scheme:** L-0 P-2 **Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Basic Knowledge of Simulation.
Course Objectives:
Students will learn basics of tracking, displays and sensors.
Course Outcomes: At the end of the course, the students will be able to -
CO1: Understanding different types displays.
CO2: Basics of Camera simulation.
CO3: Learn different types of tracking.
CO4: Create AR Environment.

Contents -

Sr.no.	Description of Practical	Practical Hours
1	Create an AR environment for any use case. The application must include at least 4 scenes which can be changed dynamically, a good UI, animation and interaction with objects. Mini project consist of theoretical understanding implements with suitable mini project.	30

Reference Books :

1. Augmented Reality by Dieter Schmalstieg, Tobias Hollerer , Pearson publication.

Syllabus
Semester-VI

Course code: SCA41MEP304	**Course name:** Practical Based on Basics of Photography	
Course category: Major Elective		
Credits: 1	**Teaching Scheme:** L-0 P-2	**Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Basic understanding of visual arts and design principles, Familiarity with using digital devices like smartphones or cameras, creative storytelling and visual expression.		
Course Objectives:		
To introduce fundamental concepts of photography, including composition, lighting, and exposure, develop technical skills in handling cameras and photography equipment, enhance creative vision and storytelling through images.		
Course Outcomes: At the end of the course, the students will be able to -		
CO1: Demonstrate knowledge of camera functions and photography techniques.		
CO2: Apply principles of composition and lighting to create impactful images.		
CO3: Analyze and critique photographs based on technical and creative aspects.		
CO4: Develop a personal photography portfolio showcasing diverse styles and themes.		

Contents -

Sr.no.	Description of Practical	Practical Hours
1	Experiment with different combinations of Aperture, Shutter Speed, and ISO.	2
2	Practice shooting photos using manual controls for full exposure control.	2
3	Take photos using various aperture settings to see their effect on depth of field.	2
4	Capture images at different shutter speeds to control motion blur or freeze action.	2
5	Take photos in low light conditions with various ISO settings to balance noise.	2
6	Shoot portraits using only available natural light, focusing on lighting angles and shadows.	2
7	Experiment with wide-angle, telephoto, and macro lenses for different perspectives.	2
8	Take photos using the Rule of Thirds to create balanced compositions.	2
9	Capture motion using a slow shutter speed and experiment with freezing action using fast shutter speeds.	2
10	Capture extreme close-ups of small objects using a macro lens.	2
11	Take portraits or product shots with flash or continuous lighting setups.	10

Reference Books:

1. The Basics of Photography: The photography handbook for who beginning in photography by Rajitha Dashin, rajitha nishadh.
2. The Basic Book of Photography by Grimm Tom

Semester: Seven

Syllabus
Semester-VII

Course code: SCA41MML401 **Course category:** Major Mandatory		**Course name:** Short Film Making
Credits: 3	**Teaching Scheme:** L-3 P-0	**Evaluation Scheme:** CA-60 ESE-40
Pre-requisites: Basic understanding of visual media concepts, storytelling, and fundamental computer skills.		
Course Objectives:		
To introduce students to the fundamentals, scope, and significance of short film making in contemporary media and digital platforms, develop visual storytelling and scriptwriting skills for live-action and animated short films, provide practical knowledge of cinematography, lighting, sound design, and editing techniques, familiarize students with pre-production, production, and post-production workflows to sensitize students to ethical practices, copyright laws, and career opportunities in the short film and digital media industry.		
Course Outcomes: At the end of the course, the students will be able to -		
CO1: Understanding the concept, types, and role of short films, and demonstrate understanding of visual storytelling principles.		
CO2: Apply story development techniques, scriptwriting formats, and storyboarding methods to create structured short film narratives.		
CO3: Analyze camera shots, lighting setups, sound design, and cinematography techniques to enhance mood, tone, and emotions in short films.		
CO4: Utilize editing, color correction, sound synchronization, and basic visual effects tools to produce a coherent short film.		
CO5: Evaluate ethical, legal, and copyright considerations and develop a finalized short film project with basic budgeting and production planning awareness.		

Contents -

Unit	Content	Teaching hours
1	**Introduction to Short Film Making** What is a short film, types of short films (Live Action, Animation, Experimental, Documentary, etc.), difference between short film & feature film, role of short films in media & film Industry. **Visual Storytelling Fundamentals** Concept of visual storytelling, elements of story (Plot, Theme, Conflict, Resolution), basics of story visualization, understanding mood, tone & emotions through visuals.	9
2	**Story Development & Script Writing** Idea generation techniques, story structure (Three Act Structure), script writing basics, screenplay format. **Storyboarding & Pre-Visualization** Importance of storyboarding in short films, types of storyboards, shot listing & scene breakdown, Pre-visualization techniques, animatics for animated short films, planning camera Angles & movements	9
3	**Camera & Cinematography** Camera basics, types of shots & angles, camera movements, depth, perspective & framing, cinematography for animated & live action films **Lighting** Basics of lighting, three point lighting system, lighting for mood & atmosphere	9

4	**Sound Design & Audio Techniques** Importance of Sound in Short Films, Types of Sound (Dialogue, Background Music, Sound Effects), Sound Recording Basics, Voice-Over, Synchronization of Audio with Visuals **Editing & Post-Production Techniques** Principles of film editing, continuity & montage editing, editing workflow, Basics of editing software, colour correction & colour grading, visual effects basics for Short Films.	9
5	**Finalization** Adding titles & credits, Rendering & exporting Formats Audience feedback & reviews. **Ethics & Copyright** Copyright laws & intellectual property, Ethical issues in filmmaking Budgeting & Basic Production Planning, Career Opportunities in Short Film Industry, Scope in Animation, OTT & digital Media.	9

Text Books :
1. The Filmmaker's Handbook – Steven Ascher & Edward Pincus, plume publisher, 2019
2. Film Directing Shot by Shot – Steven D. Katz, Focal Press publisher, 1991
3. Digital Filmmaking for Beginners – Michael Hughes, McGraw Hill TAB publisher, 2012

Syllabus
Semester-VII

Course Code: SCA41MML402	**Course name:** Advance Character Modeling
Course category: Major Mandatory	
Credits: 3 **Teaching Scheme:** L-3 P-0	**Evaluation Scheme:** CA-60 ESE-40
Pre-requisites: Basic knowledge of 3D modeling, digital sculpting, human anatomy fundamentals, and familiarity with 3D software interfaces and art principles.	
Course Objectives:	
To develop advanced character sculpting skills using software, strengthen anatomical understanding, and create production-ready character models for animation, VFX, and game portfolios.	
Course Outcomes:	
CO1: Explain advanced character modeling workflows used in animation, VFX, and games.	
CO2: Apply human anatomy principles to create accurate character sculpts.	
CO3: Analyze forms and proportions to refine character silhouettes and details.	
CO4: Create expressive characters with advanced facial sculpting and surface detailing.	
CO5: Evaluate and present portfolio-ready character models using industry standards.	

Contents –

Unit	Content	Teaching hours
1	**Advanced Character Modeling Fundamentals** Role of character modeling in Animation, VFX & Games, Character production pipeline, Advanced software interface and navigation, workspace customization and efficiency, reference gathering and concept analysis, digital sculpting workflow overview, primary, secondary, and tertiary forms, polygon vs subdivision workflows, asset organization and file management	9
2	**Human Anatomy for Character Sculpting** Human proportion systems, skeletal landmarks for sculpting, Major muscle groups, Torso anatomy. Arm and hand anatomy, Leg and foot anatomy, Head and neck anatomy, Male and female anatomical differences, Stylization vs realism, Anatomy for deformation and animation	9
3	**Advanced Sculpting Techniques** DynaMesh and subdivision workflows, Masking and deformation tools, Advanced brush techniques, Sculpting clothing and accessories, Form flow and silhouette control, Surface detailing methods, ZRemesher and retopology preparation, optimization of high-resolution sculpts.	9
4	**Facial Sculpting and Expression Design** Skull structure and facial landmarks, Eye, nose, mouth, and ear sculpting, Facial proportion systems, Symmetry and asymmetry control, Expression sculpting techniques, Emotion-driven facial modeling, Stylized and realistic face approaches, Aging and character variation	9
5	**Character Detailing, Posing & Presentation** Micro detailing: wrinkles, pores, skin texture, Polypaint fundamentals, Color theory for character surfaces, Character posing techniques, Lighting and rendering in software, Turntable creation, Export workflows, Portfolio presentation standards, Industry review and critique preparation	9

Text Books:
1. *ZBrush Character Creation: Advanced Digital Sculpting* , Spencer, Scott. Publisher,2011
2. *Anatomy for Sculptors: Understanding the Human Figure*. Exonicus, Zarins, Uldis & Kondrats, Sandis, Anatomy Next publisher, 2014.
Reference Books:
1. *Facial Modeling and Animation Done Right*, Osipa, Jason. *Stop Staring*, Sybex publisher, 2010
2. *Sculpting in ZBrush Made Simple*, Kutschera, Lukas & Eder, Sebastian, 3DTotal Publishing**,**2024

Syllabus
Semester-VII

Course Code: SCA41MML403 **Course Category:** Major Mandatory		**Course Name:** Compositing Essentials
Credits: 3	**Teaching Scheme:**L-3 P-0	**Evaluation Scheme:** CA-60 ESE-40

Pre-requisites: Basic knowledge of digital image editing, video fundamentals, and animation concepts.

Course Objectives:

To explain and illustrate the principles, terminology, and workflow of digital compositing, develop and apply technical skills using node-based and layer-based compositing software, analyze color, lighting, and visual continuity to achieve realistic and coherent composite shots, apply and evaluate visual effects techniques for film, animation, and broadcast media production, create industry-ready composite outputs by following professional standards and production pipelines.

Course Outcomes: At the end of the course, the students will be able to -

CO1: Explain the fundamentals, terminology, and production pipeline of digital compositing.

CO2: Apply keying, masking, and rotoscoping techniques to solve basic to intermediate compositing problems.

CO3: Analyze shots and implement appropriate color correction and color grading techniques to achieve visual consistency.

CO4: Integrate computer-generated elements with live-action footage by evaluating lighting, perspective, and motion continuity.

CO5: Create industry-standard composite shots using professional compositing software following established production workflows.

Contents –

Unit	Content	Teaching hours
1	**Introduction to Compositing** History and evolution of digital compositing and its role in modern film, television, and visual effects production. Compositing pipelines, compositing integrates with editing, CGI, and color grading workflows, raster and vector images, resolution, and aspect ratios, along with essential concepts such as bit depth, dynamic range, and color spaces including linear and log, commonly used image and video file formats introduction to professional compositing software, focusing on interface layout and basic workflow principles.	9
2	**Selections, Masks and Rotoscoping** Alpha channels and the differences between masks, mattes, and holdouts, Bezier masking techniques are covered in detail, including feathering and edge control, Rotoscoping methods for both static and moving objects, along with basic motion tracking techniques, Garbage mattes, motion blur.	9
3	**Keying Techniques** Principles of chroma keying, green screen and blue screen workflows, keying tools and methods, spill suppression techniques, edge refinement methods, introduction to advanced keying techniques.	9
4	**Color Correction and Image Enhancement** Primary and secondary color correction, use of scopes and histograms; shot matching and color continuity, light wrap techniques, grain management, depth and atmospheric effects.	9
5	**Compositing and VFX Integration** Basics of multi-pass compositing, integration of CG elements with live-action footage, introduction to camera tracking, use of render passes, maintaining visual continuity, output formats and delivery standards.	9

Text Books:
1. *Digital Compositing for Film and Video*, Steve Wright, Focal Press, 2010.
2. *The Art and Science of Digital Compositing*, Brinkmann, Ron, Morgan Kaufmann,2008

Reference Books:
1. *The VES Handbook of Visual Effects*, Okun, Jeffrey A., and Susan Zwerman, Routledge,2020
2. *Digital Compositing in Depth, D. Kelly*, Coriolis Group,U.S., 2000.
3. Kerlow, Isaac. *The Art of 3D Computer Animation and Effects*,Wiley,2000

Syllabus
Semester-VII

Course code: SCA41MMP401 **Course name:** Practical Based on Short Film Making **Course Category:** Major Mandatory
Credits: 1 **Teaching Scheme:** L-0 P-2 **Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Basic understanding of visual art and animation fundamentals.
Course Objectives:
Prepare students to conceptualize, produce, and present complete short films following ethical and professional practices.
Course Outcomes: At the end of the course, the students will be able to -
CO1: Understand the fundamentals of short film making, visual storytelling elements, and basic cinematic terminology.
CO2: Develop and write original short film ideas, stories, scripts, and character designs suitable for short-duration films.
CO3: Analyze storyboarding, shot listing, camera techniques, and composition, lighting, and direction principles during production.
CO4: Apply and evaluate sound recording, dubbing, editing, color correction, and post-production techniques to improve narrative and technical quality.
CO5: Create a complete short film project by integrating pre-production, production, and post-production skills while adhering to ethical and copyright standards.

Content

Sr.no.	Description of Practical	Practical Hours
1	Analyze a selected short film focusing on story, visuals, sound, and editing techniques.	2
2	Develop original short film ideas and prepare a written concept note including theme, genre, and target audience.	2
3	Write an original story suitable for a 2–5 minute short film, clearly mentioning beginning, middle, and end.	2
4	Convert the written story into a short film script using standard screenplay format (scene headings, dialogues, and actions).	2
5	Create a storyboard for a selected scene or complete short film using drawings or digital tools.	2
6	Capture and submit visual examples of at least eight different camera shots and angles with proper labeling.	2
7	Create a three-point lighting setup and capture images/videos showing different moods.	2
8	Dubbing or voice-over for a given scene or animated clip ensuring proper lip-sync and clarity.	2
9	Edit a short sequence using editing software, applying continuity and basic transitions.	2
10	Perform basic color correction and add titles and credits to an edited short film.	2
11	Project	10

Reference Books :

1. The Filmmaker's Handbook – Steven Ascher & Edward Pincus, Plume publisher, 2012
2. Film Directing Shot by Shot – Steven D. Katz, Focal Press, 1991.

Syllabus
Semester-VII

Course code: SCA41MMP402 **category:** Major Mandatory	**Course name:** Practical Based on Advance Character Modeling	
Credits: 1	**Teaching Scheme:** L-0 P-2	**Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Basic knowledge of 3D modeling, digital sculpting, human anatomy fundamentals, and familiarity with 3D software interfaces and art principles.		
Course Objectives:		
To develop advanced character sculpting skills using 3D software, strengthen anatomical understanding, and create production-ready character models for animation, VFX, and game portfolios.		
Course Outcomes: At the end of the course, the students will be able to -		
CO1: Demonstrate effective use of software tools and interface for character sculpting workflows.		
CO2: Construct anatomically correct human characters using digital sculpting techniques		
CO3: Analyze character proportions, anatomy, and form flow to refine sculpt quality		
CO4: Create high-detail character models with expressive facial features and surface detailing		
CO5: Evaluate and present finished character sculpts through poses, renders, and turntables		

Content -

Sr.no.	Description of Practical	Practical Hours
1	Familiarization with interface, navigation, and workspace customization of software	2
2	Creating a basic human base mesh using subdivision workflow	2
3	Blocking primary forms of the human body using reference images	2
4	Design Sculpting secondary anatomical forms (muscle definition)	2
5	Sculpting hands and feet with correct proportions	2
6	Create Digital sculpting of head and neck anatomy	2
7	Facial feature sculpting (eyes, nose, mouth, ears)	2
8	Creating basic facial expressions using symmetry and asymmetry	2
9	Design Surface detailing using standard brushes and alphas	2
10	Creating a simple posed character and turntable render	2
11	Project	10

Reference Books:

1. *Stop Staring: Facial Modeling and Animation Done Right*. Sybex, Osipa, Jason, 2010
2. *Sculpting in ZBrush Made Simple*. 3DTotal Publishing**,** Kutschera, Lukas & Eder, Sebastian, 2024

Syllabus
Semester-VII

Course Code: SCA41MMP403	**Course Name:** Practical Based on Compositing Essentials
Course Category: Major Mandatory	
Credits: 1	**Teaching Scheme:** L-0 P-2 **Evaluation Scheme**: CA-30 ESE-20
Pre-requisites: Basic computer operation skills, fundamental understanding of digital images and video concepts, and introductory knowledge of visual effects or animation principles.	
Course Objectives:	
Provide hands-on experience with compositing tools and techniques, develop problem-solving skills for real-world compositing challenges, and create professional-quality composite shots.	
Course Outcomes: At the end of the course, the students will be able to -	
CO1: Explain and use the compositing software interface, including layer-based and node-based workflows, to manage projects efficiently.	
CO2: Apply masking, matte creation, and rotoscoping techniques to isolate static and moving objects accurately.	
CO3: Analyze and perform motion tracking, stabilization, and chroma keying with effective spill suppression and edge refinement.	
CO4: Evaluate and implement color correction, shot matching, and multi-pass compositing workflows for visual continuity.	
CO5: Create a professional-quality composite shot by integrating multiple compositing techniques in a mini project.	

Content-

Sr.no.	Description of Practical	Practical Hours
1	Introduction to Compositing Software Interface: explore the compositing software interface, identify major panels and tools, and set up a basic project workspace.	2
2	Working with Layers, Nodes, and File Formats: Create a simple composite using layers and nodes, and import/export footage using appropriate file formats and settings.	2
3	Masking and Matte Creation Techniques: Create basic masks and mattes to isolate specific regions of an image or video for selective compositing.	2
4	Rotoscoping Static and Moving Objects: Perform rotoscoping on a static and a moving subject using spline-based masks to achieve clean object isolation.	2
5	Motion Tracking and Stabilization: Apply point or planar tracking to track motion and stabilize a shaky shot using tracking data.	2
6	Green Screen / Blue Screen Keying: Remove green or blue screen backgrounds using chroma keying tools and replace them with a new background.	2
7	Spill Suppression and Edge Refinement: Refine keyed footage by correcting color spill and improving edge quality for a clean composite.	2
8	Color Correction and Shot Matching: Apply primary color correction and match two shots to achieve consistent color and lighting.	2
9	CG Element Integration with Live Footage: Integrate a CG element into live-action footage by matching scale, lighting, perspective, and motion.	2
10	Multi-pass Compositing Workflow: Combine multiple CG render passes (diffuse, shadow, reflection, depth) to create a final composite.	2
11	Mini Project: Final Composite Shot: Create a complete composite shot by applying keying, rotoscoping, tracking, and color correction techniques.	10

Reference Books:
1. Digital Compositing for Film and Video, Steve Wright, 2010
2. Foundry Nuke User Guide.

Syllabus
Semester-VII

Course code: SCA41MEL401 **Course category:** Major Elective		**Course name:** Cyber law & Copyrights
Credits: 3	**Teaching Scheme:** L-3 P-0	**Evaluation Scheme:** CA-60 ESE-40
Pre-requisites: Understanding of computer systems, internet architecture, and social media platforms.		
Course Objectives:		
Understand the concept of cyber law in Indian jurisdiction, study the ethical side and regulations of copyrights, different laws related to content development and publishing, learn ways of registering for copyrights.		
Course Outcomes: At the end of the course, the students will be able to -		
CO1: Identify different types of cybercrimes and their jurisdictional implications.		
CO2: Apply cyber laws related to privacy, IPR, and e-governance to solve organizational problems.		
CO3: Identify and protect intellectual property issues in cyberspace, including software piracy, multimedia copyright, and database protection, types of e-governance, digital contracts.		
CO4: Understand the legal admissibility of digital evidence in courtrooms and the procedures for forensic investigations, copyright information.		
CO5: Evaluate the role of collective administration of copyrights and the effectiveness of patent laws in protecting intellectual property.		

Contents -

Unit	Content	Teaching hours
1	**Fundamentals of Cyber Law** Computer and web technology ,fundamentals of cyber law, need of cyber law, scope of cyber Law ,types of cyber law, conceptual and theoretical perspective of cyber law ,cyber Jurisprudence, data protection, and digital evidence, online transactions, digital rights, and cyber offences.	9
2	**Digital Contracts** Electronic commerce, Concept of digital contracts, types of digital contracts, law of digital contracts, the system of digital signatures: system, authentication process, and legal validity., the role and function of certifying authorities, data protection, cyber Security, legal recognition of digital evidence.	9
3	**Cryptography** The science of cryptography, cryptography, Difference between symmetric and asymmetric cryptography techniques, public key and private key, public key infrastructure, e-Governance ,types of e-Governance, Models of E-Governance, cybercrimes and cyber laws, Information Technology Act 2000, Application of cryptography in e-governance, cyber security, and data protection.	9
4	**Copyright** Introduction to copyright, Definition, Scope of Protection, work, Authorship and ownership of copyright, types of work, foreign works, sound recording , authorship and ownership, rights regarding different work.	9
5	**Registration and Patents** Procedure for registration of copyright and its legal significance, terms of copyright, administration of copyright law, collective administration of copyrights, copyright infringements, patent and law of patents.	9

Text Books :
1. CYBER LAW SIMPLIFIED, by Sood (Author), McGraw Hill, 1 July 2017
2. Cyber Laws Intellectual property, E-Commerce Scurity, edited by Krishna kumar, co-edited by :S.R. Sharma

Syllabus

Semester-VII

Course code: SCA41MEL402 **Course name:** Advertisement & Legal Aspects **Course category:** Major Elective		
Credits: 3	**Teaching Scheme:** L-3 P-0	**Evaluation Scheme:** CA-60 ESE-40
Pre-requisites: Basic knowledge of Advertising.		
Course Objectives:		
Understand marketing strategies, ways of advertising, legal aspects, ethical side and regulations of advertising, ethical side and regulations of advertising.		
Course Outcomes: At the end of the course, the students will be able to -		
CO1: Explain the concepts, functions, importance, role of advertisement and IMC Basics.		
CO2: Analyze various classifications and media types of advertising.		
CO3: Apply creative principles based on consumer psychology to design effective advertising messages including copy, headlines, slogans, and logos across traditional and emerging media.		
CO4: Evaluate advertising campaigns by applying budgeting methods, media planning and scheduling techniques, agency coordination, and effectiveness measurement through pre- and post-testing.		
CO5: Analyze the economic and social implications of advertising and evaluate ethical practices, truthfulness, and regulatory frameworks governing advertising in India.		

Contents -

Unit	Content	Teaching hours
1	**Introduction of Advertising** What is advertising, features of advertising, objective of advertising, importance of advertising, role and functions of advertising in society **Integrated marketing communication** Meaning of IMC (Integrated Marketing Communication), tools of IMC, Importance of IMC, Framing Integrated marketing.	9
2	**Classification of Advertising** Types of advertising, determinants of advertising media, radio advertising, internet advertising, television advertising, press advertising, film advertising, and purchase point advertising, specialty advertising, video advertising, outdoor or mural advertising, emerging media options, display or indoor publicity.	9
3	**Creativity in Advertising** Concept and importance of creativity , consumer psychology, buying motives, selling points, visualization, headline, slogan, logo, role of art direction and copywriting.	9
4	**Advertising Management and Campaign Planning** Advertising planning process, advertising budget and budgeting methods, campaign strategy and execution, media planning and media scheduling, coordination with advertising agencies, measuring advertising effectiveness, pre-testing and post-testing of advertisements.	9
5	**Economic and social aspects of advertising** Social aspects of advertising, Ethics in advertising, "Truth" in Advertising **Regulation and control on Advertising :** Advertising Standards Council of India (ASCI), Doordarshan code, Ministry of Information and Broadcasting.	9

Text Books :
1. Advertising: Theory and Practice, Pratha Sarkar, 2015
2. ADVERTISING AND PROMOTION: AN INTEGRATED MARKETING COMMUNICATIONS PERSPECTIVE by George Belch (Author), Michael Belch (Author), Keyoor Purani (Author), 2009
3. Advertising Management, Fifth Edition, By Pearson . Author :RAJEEV BATRA, DAVID A. AAKER

Syllabus

Semester-VII

Course code: SCA41MEP401 **Course name:** Practical Based on Cyber law & Copyrights **Course category:** Major Elective		
Credits: 1	**Teaching Scheme:** L-0 P-2	**Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Basic knowledge of computer systems, internet technologies, and introductory legal or information technology concepts.		
Course Objectives:		
To provide comprehensive understanding of cyber law, digital contracts, cryptography, cybercrimes, and intellectual property rights in the digital environment.		
Course Outcomes: At the end of the course, the students will be able to -		
CO1: Understanding the fundamentals, scope, and jurisprudential aspects of cyber law and its relevance in the digital era.		
CO2: Apply legal principles governing digital contracts, digital signatures, certifying authorities, and digital evidence.		
CO3: Analyze cryptographic techniques, public key infrastructure, and e-governance models in securing digital transactions.		
CO4: Evaluate cyber-crimes and legal provisions under the Information Technology Act, 2000, including data protection and cyber security issues.		
CO5: Interpret copyright and patent laws, including registration, ownership, infringement, and administration of intellectual property rights.		

Content -

Sr.no.	Description of Practical	Practical Hours
1	Study and prepare a report on the scope, need, and types of Cyber Law with real-world examples.	2
2	Analyse selected case laws related to cyber jurisprudence and present legal interpretations.	2
3	Examine different types of digital contracts and draft a basic digital contract format.	2
4	Study the working of digital signatures and the role of Certifying Authorities in India.	2
5	Analyse data protection and cyber security measures with reference to Indian cyber laws.	2
6	Demonstrate basic cryptographic concepts including public key and private key encryption.	2
7	Prepare a case study on cyber crimes and provisions under the Information Technology Act, 2000.	2
8	Analyze copyright protection for digital works including sound recordings and foreign works.	2
9	Study the process of copyright registration and identify instances of copyright infringement.	2
10	Prepare a comparative report on copyright law and patent law highlighting scope, rights, and administration.	2
11	Project	10

Reference Books:
1. Cyber Law: The Indian Perspective, Pavan Duggal Saakshar Law Publications, 2002
2. Cyber Law and Information Technology, B. B. N. Choudhary, Oxford University Press, 2014

Syllabus

Semester-VII

Course code: SCA41MEP402 **Course name:** Practical Based on Advertisement & Legal Aspects **Course category:** Major Elective		
Credits: 1	**Teaching Scheme:** L-0 P-2	**Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Basic understanding of marketing principles, consumer behavior, and communication concept.		
Course Objectives:		
To equip students with the knowledge and practical skills required for designing, managing, and evaluating advertising campaigns and integrated marketing communications across traditional and digital media.		
Course Outcomes: At the end of the course, the students will be able to -		
CO1: Understanding the fundamentals, objectives, features, and societal role of advertising and integrated marketing communication.		
CO2: Apply creative principles, consumer psychology, and messaging techniques to design advertisements across various media platforms.		
CO3: Develop and analyze advertising campaigns including planning, budgeting, media selection, and execution strategies		
CO4: Evaluate advertising effectiveness, pre-testing and post-testing results, and ethical compliance according to ASCI and regulatory guidelines.		
CO5: Design comprehensive, socially responsible advertising campaigns integrating creativity, media strategy, and regulatory compliance.		

Content -

Sr.no.	Description of Practical	Practical Hours
1	Prepare a report explaining the concept, objectives, features, and role of advertising in society with examples.	2
2	Analyze an Integrated Marketing Communication (IMC) campaign and identify the tools used across different media.	2
3	Classify different types of advertising and prepare a comparative chart of traditional and digital advertising media.	2
4	Design an advertising message for a product focusing on creativity, consumer psychology, and buying motives.	2
5	Create a print advertisement including headline, slogan, logo, visualization, and copy elements.	2
6	Develop a basic advertising campaign plan including objectives, target audience, budget, and media selection.	2
7	Prepare a media plan and media schedule for a selected product or service.	2
8	Conduct pre-testing and post-testing of an advertisement using basic evaluation methods.	2
9	Prepare a case study on ethical issues and social responsibilities in advertising with reference to ASCI guidelines.	2
10	Study and present the regulatory framework of advertising in India, including ASCI, Doordarshan Code, and Ministry of Information and Broadcasting.	2
11	Project	10

Reference Books:
1. *Advertising and Promotion: An Integrated Marketing Communications Perspective*, Belch, G. E. & Belch, M. A.**,** McGraw-Hill Education, 2009
2. *Contemporary Advertising*, Belch, G. E. & Belch, M. A.McGraw-Hill Education, 2018

Syllabus
Semester-VII

Course code: SCA41RML401	**Course Name:** Research Methodology	
Course Category: Research Methodology		
Credits: 3	**Teaching Scheme:** L-3 P-0	**Evaluation Scheme:** CA-60 ESE-40
Pre-requisites: Basic understanding of subject fundamentals, elementary statistics, and academic reading and writing skills.		
Course Objectives: To develop an understanding of research methodology principles and techniques applicable to problem identification, analysis		
Course Outcomes: At the end of the course, the students will be able to -		
CO1: To develops the ability to identify research problems and formulate objectives and hypotheses.		
CO2: To familiarizes students with research design, data collection, and analysis techniques relevant to robotics.		
CO3: To enhances skills in technical writing, documentation, and research ethics.		
CO4: Analyze and apply statistical techniques such as data processing, descriptive statistics, correlation, regression, and hypothesis testing to interpret and validate research data.		
CO5: Evaluate research findings and create a structured research report or mini proposal using appropriate referencing styles, ethical practices, and computer-based research tools.		

Contents -

Unit	Contents	Teaching Hours.
1	**Introduction to Research & Research Process:** Meaning of Research, objectives, motivation, and significance of research, Types of research (basic/applied, qualitative/quantitative, conceptual/empirical) Research methods vs. research methodology, Research Approaches, Significance of Research, Scientific method and research ethics, Steps in the research process, Criteria of Good Research, Problems Encountered by Researchers in India	9
2	**Research Problem Formulation & Research Design:** Identification and definition of research problems in engineering/robotics (Meaning and sources of research problems, Criteria for selecting a research problem, Defining and formulating research problems), Review of literature and research gap identification, Formulation of objectives and hypotheses, Research design: exploratory, descriptive, experimental, Features of a good research design	9
3	**Sampling Design & Data Collection Methods:** Sampling concepts, population, sample, sampling errors , Probability and non-probability sampling techniques (Sample size (basic concept)Types of sampling errors (Sampling error, Non-sampling error, Bias and sources of bias), Methods of data collection: observation, interview, questionnaire, experiments, Selection of appropriate sampling and data collection methods (Nature of research problem, Objectives of the study, Time, cost, and resource constraints, Accuracy and reliability requirements, Relevance to robotics and engineering research)	9
4	**Data Processing, Analysis & Hypothesis Testing:** Data processing (Editing, coding, classification, tabulation), Descriptive statistics) Measures of central tendency, Measures of dispersion, Correlation and regression, Hypothesis testing (Concepts and Procedure, parametric and non-parametric tests), Interpretation of Statistical results.	9

5	**Research Reporting:** Interpretation of research results, Research report writing (Structure of research report technical paper, and project report), Referencing styles and bibliography, Plagiarism and ethical issues in research, Role of computers in research (Data analysis tools, Documentation and presentation tools), Preparation of a mini research proposal / report	9

Text Books :
1.C.R. Kothari — Research Methodology: Methods & Techniques 2.Ranjit Kumar — Research Methodology: A Step-by-Step Guide for Beginners
Reference Books: 1.Garg, B.L., Karadia, R., Agarwal, R., & Agarwal, U.K. — An Introduction to Research Methodology 2.Paul D. Leedy& Jeanne Ellis Ormrod — Practical Research: Planning and Design
Online Resources: 1.Alison – Essentials of Research Methodology

Syllabus

Semester-VII

Course code: SCA41RMP401 **Course name:** Practical Based on Research Methodology **Course category:** Research Methodology
Credits: 1 **Teaching Scheme:** L-0 P-2 **Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Research Methodology practical is a basic understanding of research design, data collection methods, and fundamental statistical and analytical tools.
Course Objectives: The Research Methodology course is to equip students with the skills to design, conduct, analyze, and interpret research systematically and ethically
Course Outcomes: At the end of the course, the students will be able to -
CO1: To develops the ability to identify research problems and formulate objectives and hypotheses.
CO2: To familiarizes students with research design, data collection, and analysis techniques relevant to robotics.
CO3: To enhances skills in technical writing, documentation, and research ethics.
CO4: Analyze and apply statistical techniques such as data processing, descriptive statistics, correlation, regression, and hypothesis testing to interpret and validate research data.
CO5: Evaluate research findings and create a structured research report or mini proposal using appropriate referencing styles, ethical practices, and computer-based research tools.

Content -

Sr.no.	Description of Practical	Practical Hours
1	Identify research papers from journals/conferences and prepare a structured literature review.	2
2	Select a domain in computer fraternity and define a clear research problem with objectives.	2
3	Write research objectives and formulate null and alternative hypotheses.	2
4	Develop a suitable research design for a selected problem (exploratory/descriptive/experimental).	2
5	Identify population, sample size, sampling technique, and justify the choice.	2
6	Design a questionnaire for data collection related to a computer fraternity problem.	2
7	Collect sample data using questionnaire/observation and enter data in spreadsheet/software.	2
8	Perform basic statistical analysis (mean, median, standard deviation, graphs).	2
9	Apply an appropriate statistical test (t-test / chi-square) and interpret results.	2
10	Prepare and present a mini research report standard research paper format.	2
11	Project:	10

Text Books :
1.C.R. Kothari Research Methodology: Methods & Techniques
2.Ranjit Kumar Research Methodology: A Step-by-Step Guide for Beginners

Reference Books:
1. Garg, B.L., Karadia, R., Agarwal, R., & Agarwal, U.K. An Introduction to Research Methodology
2.Paul D. Leedy& Jeanne Ellis Ormrod — Practical Research: Planning and Design

Online Resources: 1. Alison – Essentials of Research Methodology

Semester: Eight

Syllabus

Semester-VIII

Course code: SCA41MML404 **Course category:** Major Mandatory		**Course name:** Dynamic Simulation
Credits: 3	**Teaching Scheme:** L-3 P-0	**Evaluation Scheme:** CA-60 ESE-40
Pre-requisites: Basic Knowledge of Simulation.		
Course Objectives:		
To equip students with the knowledge and practical skills required to create, control, and optimize realistic fluid, particle, and dynamic simulations using software for professional visual effects and animation production.		
Course Outcomes: At the end of the course, the students will be able to -		
CO1: Understanding the fundamental concepts of simulation and computer simulation, including definitions, processes, types of models, applications, advantages.		
CO2: Identify and use the core interface elements such as particles, SPH and Hybrido fluids, rigid and soft bodies, daemons, meshes, RealWave, scripting tools		
CO3: Analyzing time-based animations by applying animation curves, keyframes, preferences, simulation settings, and data import/export workflows		
CO4: Evaluate different simulation techniques including SPH foam, elastic particle cloth, fluid relaxation, surface tension control, shattered glass, and calm fluid surfaces		
CO5: Design and execute advanced dynamic simulations involving rigid bodies, Hybrido fluids, particle-based meshing, scripted simulations, object interaction, splashes, slow-motion effects		

Contents -

Unit	Content	Teaching hours
1	**Introduction :** Simulation, computer simulation, Definition, process of simulating a system, applications, advantages and disadvantages, types of models, why realflow.	9
2	**Interface:** Elements: Particles, Hybrido Fluids, SPH Fluids, Rigid and Soft Bodies, RealWave, Daemons, Meshes, Maxwell Render, Scripting and Coding, Customizing the Layout, Adding Nodes, Navigating the Viewport.	9
3	**Time & Animation:** Manipulating Animation Curves, Creating Animation Keys, Preferences, Simulation Settings, Relationships, Exporting Simulation Data, Importing Simulation Data, Maxwell Render.	9
4	**Simulation Techniques:** Foam with SPH Fluids, Adjusting the "Square" Emitter, Adjusting the "Container01" Node, Adjusting the "Filter" Daemon, Adjusting the "Surface Tension" Daemon, The Simulation, Elastic Particles Cloth, Calm Fluid Surfaces, The Relaxation Process, Shattered Glass, Glass Filling, Relaxing the Fluid.	9
5	**Advanced Dynamics:** Glass Shattering, Fragmenting the Glass, The Simulation and Previews, Particle-Based Meshing, Channels, Falling Pencils, Preparing the Script, Running the Script and the Simulation, Floating Objects, Adjusting the Cubes, Adjusting the Cubes' Centre of Gravity, Hybrido and Rigid Bodies, Adjusting the Splash Emitter, The Splash Simulation, Slow Motion Bunnies, MultiJoint Crane.	9

Text Books :
1. RealFlow by Jesse Russell & Ronald Cohn, Book on Demand
2. Realflow Beginner guide

Syllabus
Semester-VIII

Course Code: SCA41MML405		**Course name:** Realistic Character Modeling
Course category: Major Mandatory		
Credits: 3	**Teaching Scheme:** L-3 P-0	**Evaluation Scheme:** CA-60 ESE-40
Pre-requisites: Basic knowledge of character modeling, human anatomy fundamentals, polygon modeling, and familiarity with digital sculpting concepts.		
Course Objectives:		
To develop skills in realistic character modeling using 3D software with emphasis on clean topology, anatomical accuracy, and industry-standard presentation.		
Course Outcomes:		
CO1: Explain realistic character modeling pipelines using 3d software		
CO2: Apply anatomical principles to create realistic character models		
CO3: Analyze topology and edge flow for animation-ready characters		
CO4: Create clean, detailed character models using polygon workflows		
CO5: Evaluate and present characters based on industry standards		

Contents –

Unit	Content	Teaching hours
1	**Realistic Character Modeling Pipeline:** Realistic character workflow overview, Industry pipelines (Animation, VFX, Games), software interface and navigation, Project setup and scene organization, Scale, units, and reference setup, Polygon modeling principles, Clean topology concepts, Quad-based modeling workflow	9
2	**Anatomy-Based Character Construction:** Human proportion systems, Skeletal landmarks for modeling, Torso structure and volumes, Arm and hand topology, Leg and foot topology, Head and neck construction, Male and female proportion differences, Anatomy for deformation	9
3	**Advanced Polygon Modeling Techniques:** Edge flow and topology control, Facial topology for animation, Subdivision modeling workflow, Retopology techniques in Maya, Modeling clothing and accessories, Hard–soft surface integration, Mesh cleanup and optimization	9
4	**Detailing, UVs & Surface Preparation:** Refining forms and silhouettes, UV unwrapping fundamentals, UV layout optimization, Preparing models for texturing, Normal map and displacement basics, Model optimization for animation, Export standards	9
5	**Character Presentation & Portfolio Development:** Character posing basics, Lighting setup in software , Camera composition, Turntable animation creation, Rendering basics (Arnold), Presentation standards, Portfolio breakdowns, Industry critique preparation	9

Text Books:
1. *Introducing Autodesk Maya* – Wiley, Hogarth, Scott Spencer.
2. *Introducing Autodesk Maya* – Wiley, Derakhshani, Dariush, 2015
Reference Books:
1**.** Topology for 3D Artists – William Vaughan
2**.** Character Modeling with Maya and ZBrush **–** Eric Keller

Syllabus
Semester-VIII

Course Code: SCA41MML406	**Course Name:** Advanced Compositing
Course Category: Major Mandatory	
Credits: 3	**Teaching Scheme:** L-3 P-0 **Evaluation Scheme:** CA-60 ESE-40
Pre-requisites: Basic understanding of digital imaging concepts, computer graphics fundamentals, and familiarity with any node-based compositing software and timeline/keyframe animation basics.	
Course Objectives: To explain and apply advanced compositing concepts and workflows used in professional production pipelines, develop and apply problem-solving skills for handling complex compositing tasks, analyze and implement animation, color, and keying techniques for realistic visual integration, evaluate compositing solutions used in film, animation, and OTT media, create professional-quality composite shots suitable for portfolios and demo reels.	
Course Outcomes: At the end of the course, the students will be able to -	
CO1: Apply advanced compositing software tools and node-based workflows efficiently.	
CO2: Create clean masks and high-quality rotoscoped elements for complex shots.	
CO3: Perform advanced chroma keying and background replacement techniques.	
CO4: Analyze and apply color correction, animation, and visual enhancement techniques.	
CO5: Create a complete industry-standard composite shot suitable for a demo reel.	

Contents –

Unit	Content	Teaching hours
1	**Interface and Workflow Management** Navigating the compositing software interface, workspace customization, building and organizing node graphs, creating and editing keyframes, using the Curve Editor for smooth animation and timing control, Building clean and logical node structures naming conventions, backdrops, and color coding for readability, Creating, editing, and managing keyframes, Understanding interpolation types and animation curves	9
2	**Transformations and Animation** Keyframe-based animation of transforms, use of mathematical expressions and parameter linking, creating procedural animated elements, correcting lens distortion for accurate compositing, Translation, rotation, scaling, and pivot control, Keyframe Based Animation, Procedural Animation	9
3	**Color Management and Rotoscoping** Color management fundamentals, linear workflows, color correction of composite shots, advanced rotoscoping techniques, masking operations and motion consistency, Complex shape creation and refinement, Rotoscoping for organic motion and overlapping forms, mask accuracy over time, Reducing jitter and edge artifacts	9
4	**Compositing CGI and Channel-Based Workflows** Understanding and mastering channel systems, multi-pass CG compositing, integrating render passes, adding motion blur, depth of field, and enhancing realism Render Pass Integration: Combining diffuse, specular, reflection, and shadow passes, Using mattes and IDs for targeted adjustments.	9
5	**Advanced Keying Techniques:** Luma keying concepts, detailed study of chroma keyers, proper use of Addmix and Keymix nodes, combining multiple keys, edge refinement, and matte optimization	9

Text Books:
1. Digital Compositing for Film and Video. Focal Press, Third Edition, steve wright.

Reference Books:
1. Brinkmann, Ron. The Art and Science of Digital Compositing. Morgan Kaufmann,2008
2. Okun, Jeffrey A., & Zwerman, Susan. The VES Handbook of Visual Effects. Focal Press, 2020

Syllabus
Semester-VIII

Course code: SCA41MMP404 **Course name:** Practical Based on Dynamic Simulation **Course category:** Major Mandatory		
Credits: 1	**Teaching Scheme:** L-0 P-2	**Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Basic knowledge of computer graphics, animation principles, and familiarity with 3D software and digital rendering workflows.		
Course Objectives:		
To develop comprehensive skills for simulating realistic fluid, particle, and dynamic systems through fundamental, advanced, and production-oriented simulation techniques.		
Course Outcomes: At the end of the course, the students will be able to -		
CO1: Understanding the fundamentals of simulation, computer simulation processes, model types, and the role in visual effects and animation.		
CO2: Identify and use interface elements such as particles, fluids, bodies, daemons, meshes, and viewport controls to set up basic simulation scenes.		
CO3: Create and analyze time-based fluid simulations using animation keys, curves, SPH and Hybrido fluids, foam generation, and relaxation techniques.		
CO4: Develop advanced dynamic simulations including glass shattering, rigid body interactions, particle-based meshing, scripting, and complex object behavior.		
CO5: Evaluate simulation results and produce production-ready outputs by exporting/importing simulation data and rendering realistic scenes using Maxwell Render.		

Content -

Sr.no.	Description of Practical	Practical Hours
1	Create a basic simulation scene to demonstrate the process of computer simulation using particles and basic emitters.	2
2	Explore the interface of software by identifying and working with particles, SPH fluids, Hybrido fluids, rigid bodies, daemons, meshes, and viewport navigation tools.	2
3	Create and animate a fluid emitter using keyframes and animation curves; adjust simulation time, preferences, and global simulation settings.	2
4	Set up an SPH fluid simulation with foam generation by adjusting the Square emitter, container node, Filter daemon, and Surface Tension daemon.	2
5	Simulate calm fluid surfaces using relaxation techniques and demonstrate elastic particle cloth behavior.	2
6	Create a glass-filling simulation and apply relaxation techniques to achieve realistic fluid behavior.	2
7	Perform a glass-shattering simulation by fragmenting geometry and previewing particle-based meshing results.	2
8	Create a particle-based mesh and manage channels for exporting and importing simulation data.	2
9	Simulate interactions between Hybrido fluids and rigid bodies, including splash emitters and floating objects with adjusted centre of gravity.	2
10	Execute an advanced dynamics simulation using scripting, including falling objects or multi-joint systems, and render the final output using Maxwell Render.	2
11	Project	10

Reference Books:
1. RealFlow by Jesse Russell & Ronald Cohn, Book on Demand
2. Realflow Beginner guide

Syllabus
Semester-VIII

Course code: SCA41MMP405 **Course name:** Practical Based on Realistic Character Modeling **Course category:** Major Mandatory
Credits: 1 **Teaching Scheme:** L-0 P-2 **Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Basic knowledge of character modeling, human anatomy fundamentals, polygon modeling, and familiarity with digital sculpting concepts.
Course Objectives:
To develop skills in realistic character modeling using software with emphasis on clean topology, anatomical accuracy, and industry-standard presentation.
Course Outcomes: At the end of the course, the students will be able to -
CO1: Demonstrate effective use of Maya tools for character modeling.
CO2: Construct anatomically accurate character models.
CO3: Analyze topology for deformation and animation.
CO4: Create optimized, realistic characters with proper presentation.
CO5: Evaluate character quality for professional portfolios.

Content -

Sr.no.	Description of Practical	Practical Hours
1	Software interface, navigation, and project setup	2
2	Setting scale and reference images	2
3	Blocking a realistic human body using polygons	2
4	Modeling torso with correct topology	2
5	Modeling arms and hands	2
6	Modeling legs and feet	2
7	Head and facial topology modeling	2
8	Clothing and accessory modeling	2
9	UV unwrapping and layout	2
10	Lighting, rendering, and turntable creation	2
11	Project	10

Reference Books:

1. Anatomy for Sculptors – Uldis Zarins & Sandis Kondrats, 2014
2. Character Modeling with Maya and ZBrush – Eric Keller

Syllabus
Semester-VIII

Course Code: SCA41MMP406 **Course Name:** Practical Based on Advanced Compositing **Course Category:** Major Mandatory
Credits: 1 **Teaching Scheme:**L-0 P-2 **Evaluation Scheme**: CA-30 ESE-20
Pre-requisites: Basic computer literacy with an introductory understanding of digital images/video, animation or VFX fundamentals, and familiarity with any image or video editing software.
Course Objectives:
To apply advanced compositing tools through structured practical exercises, analyze real-world VFX compositing challenges, create professional-quality composite outputs suitable for portfolios.
Course Outcomes: At the end of the course, the students will be able to -
CO1: Use advanced compositing software tools and workflows efficiently.
CO2: Create accurate masks and rotoscoped elements for static and moving objects.
CO3: Perform chroma keying, background replacement, and cleanup operations.
CO4: Apply color correction, lighting adjustments, and visual enhancements.
CO5: Produce a complete composite shot suitable for a demo reel or portfolio.

Content:

Sr.no.	Description of the Experiment	Practical Hours
1	Study of Compositing Software Interface and Workflow: Study of the compositing software interface, tools, project settings, and basic workflow from importing footage to final output.	2
2	Creating Animation Using PNG and JPEG Image Sequences: Importing and arranging image sequences and creating basic animations using keyframes and timing controls.	2
3	Chroma Keying and Background Removal Techniques: Application of green/blue screen keying techniques to remove backgrounds and replace them with suitable environments.	2
4	Background, Rope, and Wire Removal Techniques: Removal of unwanted objects such as backgrounds, ropes, or wires using masking, rotoscoping, and cleanup tools.	2
5	Design and Creation of Matte Painting: Designing a simple digital matte painting and integrating it into a composite shot using appropriate compositing techniques.	2
6	Motion Tracking Techniques in VFX: Application of point or planar tracking techniques to track motion and attach visual elements accurately.	2
7	Introduction to 3D Camera Tracking: Basic camera tracking to analyze camera movement and integrate CG elements into live-action footage.	2
8	Lighting and Visual Enhancement Techniques in Compositing: Adjustment of lighting, color, and contrast, and application of visual enhancement techniques to improve realism.	2
9	Match Moving Techniques for CG Integration: Matching scale, position, perspective, and motion of CG elements with live-action footage.	2
10	Rendering and Exporting Composites in Different Formats:Rendering final composite shots and exporting them in appropriate formats and resolutions for various media platforms.	2

11	Mini Project: Final Composite Shot: Creation of a complete composite shot by integrating keying, rotoscoping, tracking, color correction, and rendering techniques.	10

Reference Book :
1. Digital Compositing for Film and Video Steve Wright, Focal Press, Third Edition, 2010
2. Brinkmann, Ron. The Art and Science of Digital Compositing. Morgan Kaufmann, 2008

Syllabus
Semester-VIII

Course code: SCA41MEL403	**Course name:** Motion Tracking Techniques	
Course category: Major Elective		
Credits: 3	**Teaching Scheme:** L-3 P-0	**Evaluation Scheme:** CA-60 ESE-40

Pre-requisites: Basic knowledge of Animation & VFX fundamentals

Course Objectives:

Introduce students to motion tracking and match moving concepts used in animation and VFX.

Course Outcomes: At the end of the course, the students will be able to -

CO1: Understand the fundamental concepts of motion tracking, match moving, types of tracking, and their applications in animation and VFX industry.

CO2: Analyze 2D point tracking and planar tracking techniques using industry-standard software to extract accurate motion data from live-action footage.

CO3: Implement camera tracking and 3D motion tracking techniques for integrating CG elements seamlessly into live-action scenes.

CO4: Create a complete motion tracking project by following professional VFX workflows, ethical practices, and industry standards suitable for a production portfolio.

CO5: Evaluate and refine tracking data using advanced techniques such as noise reduction, feature enhancement, and rotoscoping support for seamless compositing.

Content -

Unit	Content	Teaching hours
1	**Fundamentals of Motion Tracking** Definition & scope of motion tracking (match moving, camera solving) importance in VFX, Animation & Film Production, difference between motion tracking, motion capture & match moving, types of tracking (2D, Planar & Camera Tracking) **Tools & Software for Motion Tracking** Software overview, interface, panels and basic navigation, importing footage & project setup, tool selection and workflow	9
2	**Point & Feature Tracking** Introduction to point tracking concepts, selecting track points & regions, automatic vs manual point tracking **Planar Tracking Techniques** understanding planar surfaces, planar tracker tools, tracking non-rigid & complex surfaces, exporting planar track Data	9
3	**Camera Tracking Basics** Camera motion concepts, solving camera movement from footage, lens distortion correction, camera path interpretation, application for 3D Integration **3D Object & Scene Tracking** 3D tracking fundamentals, setting scene scale & orientation, tracking multiple objects, exporting 3D track data to 3D software	9

4	**Tracking for Compositing** Using tracked data in compositing, aligning CG Assets with footage, layer Integration & match move refinement, stabilization vs tracking, color & lens matching for seamless integration. **Advanced Techniques** Noise reduction & feature enhancement, rotoscoping support for tracking, planar + camera tracking combined	9
5	**Motion Tracking Project** Project Planning & Footage Preparation**,** execution of tracking workflow Footage rendering, final rendered output.	9

Text Books :
1. The Invisible Art of Camera Tracking (2nd Edition) — Tim Dobbert, 2012
2. Adobe® After Effects® CC Visual Effects and Compositing Studio Techniques — Mark Christiansen - 2013

Syllabus
Semester-VIII

Course code: SCA41MEL404 **Course category:** Major Elective		**Course name:** Print Design Layout
Credits: 3	**Teaching Scheme:** L-3 P-0	**Evaluation Scheme:** CA-60 ESE-40
Pre-requisites: Basic computer literacy with introductory knowledge of graphic design principles, typography, and digital image formats.		
Course Objectives:		
To equip learners with comprehensive skills in Adobe InDesign for creating, managing, formatting, and exporting professional print and interactive documents using advanced layout, typography, color, image, and production techniques.		
Course Outcomes: At the end of the course, the students will be able to -		
CO1: Explain the software workspace, interface navigation, panels, pages, master pages, guides, grids, and document management features for professional page layout design.		
CO2: Apply page management, object handling, typography, color systems, and image placement techniques to create well-structured print and digital layouts.		
CO3: Analyze and manage text flow, styles, tables, transparency, and typography settings to improve readability, consistency, and visual hierarchy in documents.		
CO4: Create advanced layouts incorporating interactive PDFs, QR codes, gradients, stylesheets, image manipulation, and special text effects using industry-standard practices.		
CO5: Evaluate and prepare documents for professional output by applying printing, packaging, color modes, PDF export, and preflight settings to ensure production-ready files.		

Contents -

Unit	Content	Teaching hours
1	**Introducing the workspace & Working with pages** Working with panels, customize workspace, menus, navigation of interface, guides & grid, Adding text, Text styles, Graphics, object, presentation mode. **Working with pages** Master pages, applying master pages, rearranging and deleting document pages, size of the pages, page numbering, overriding master pages switching between documents.	9
2	**Working with objects & Typography** Layer basics, text frames & graphics frames, placing & linking of frames, modify shapes, transforming and align objects, group objects creating a QR code. **Typography:** Flowing text into frame, creating text frames, flowing text, finding text, importing text, checking spelling, story editor, tracking changes, vertical spacing, changing fonts & type styles, alignments, drop cap, word spacing, paragraph, character & paragraph styles, managing colors, gradient colors, spot colors	9
3	**Tables, Transparency, Printing** Tables, basics of tables, converting text to a table, formatting a table, header row, adding graphics to tables, applying styles to tables, transparency, applying transparency to images, apply transparency effect vector and bitmap graphics, Working with effects	9

	Printing packaging files, previewing page, print settings, color modes, creating PDF Interactive PDF	
4	**Working with Color** Applying color to objects, creating dashed lines, working with gradients creating and applying swatches and gradient swatches, creating a tint Multicolor gradient. **Working with Images** Placing graphics, Stacking and text wrap, Align multiple objects	9
5	**Style Sheets and Fine-Tuning Text** Different text flow options, creating and applying styles, importing styles from another document, creating a footer and special characters finding and changing formatting and special characters, Finding and changing a missing font creating text on a path, working with tabs, drop shadows **Image Manipulation in InDesign** The links palette, changing display settings, clipping Pages (Removing a white background), examining photoshop paths and alpha channels importing Illustrator files, placing PDF files.	9

Text Books :
1. Adobe InDesign CC - Classroom in a Book - The Official Training Workbook from Adobe - 2017
2. Adobe InDesign CC: A Complete Course and Compendium of Features, by Stephen Laskevitch, 2019

Syllabus
Semester-VIII

Course code: SCA41MEP403 **Course name:** Practical Based on Motion Tracking Techniques **Course Category:** Major Elective
Credits: 1 **Teaching Scheme:** L-0 P-2 **Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Basic familiarity with any video editing or compositing software.
Course Objectives:
Develop practical skills in 2D, planar, and camera tracking techniques using industry-standard software.
Course Outcomes: At the end of the course, the students will be able to -
CO1: Understand the fundamentals of motion tracking, its scope, and differentiate between motion tracking, motion capture, and match moving techniques.
CO2: Apply 2D point tracking and planar tracking techniques to track objects and surfaces in live-action footage using appropriate software tools.
CO3: Analyze camera motion, lens distortion, and tracking errors to solve accurate camera tracking and scene orientation.
CO4: Evaluate and refine tracking data using advanced techniques such as noise reduction, feature enhancement, and rotoscoping support for seamless compositing.
CO5: Create a complete motion tracking project by planning footage, executing suitable tracking workflows, integrating CG elements, and producing a final rendered output.

Content -

Sr.no.	Description of Practical	Practical Hours
1	Study of motion tracking tools and interface of software.	2
2	Footage preparation for tracking: trimming, stabilization check, resolution, and frame rate setup.	2
3	Study the process of importing footage and setting up a project for motion tracking using suitable software.	2
4	Perform basic 2D point tracking on a given video footage and attach a text or graphic element to the tracked object.	2
5	Apply multi-point tracking to track position, scale, and rotation of a moving object and integrate a visual element accurately.	2
6	Identify planar surfaces in the given footage and define tracking regions suitable for planar tracking.	2
7	Integrate a 3D object into a tracked scene by setting scene scale, orientation, and applying the solved camera data.	2
8	Use motion tracking data for compositing and stabilization by aligning CG elements with live-action footage.	2
9	Apply advanced tracking techniques such as noise reduction, feature enhancement, and rotoscoping support to improve tracking accuracy.	2
10	Execute a complete motion tracking project starting from footage planning to final rendered output using appropriate tracking techniques.	2
11	Project	10

Reference Books :

1. Adobe® After Effects® CC Visual Effects and Compositing Studio Techniques — Mark Christiansen

Syllabus
Semester-VIII

Course code: SCA41MEP404 **Course name:** Practical Based on Print Design Layout **Course category:** Major Elective		
Credits: 1	**Teaching Scheme:** L-0 P-2	**Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Basic knowledge of computer operations and fundamental understanding of graphic design concepts and typography.		
Course Objectives:		
To develop practical proficiency for creating, designing, managing, and exporting professional print and digital layouts using industry-standard tools and workflows.		
Course Outcomes: At the end of the course, the students will be able to -		
CO1: Understand the software workspace, document setup options, and layout fundamentals including page size, margins, columns, and bleed settings.		
CO2: Apply text frames, basic typography tools, image placement techniques, and frame fitting options to design effective single-page layouts.		
CO3: Develop multi-page documents using master pages, automatic page numbering, paragraph styles, character styles, and object styles for consistency and efficiency.		
CO4: Design professional print layouts such as tri-fold brochures and magazine covers by analyzing visual hierarchy, typography, image usage, layers, guides, and text wrap techniques.		
CO5: Create interactive documents and prepare files for print and digital output by evaluating preflight errors, applying bleed settings, exporting formats, and integrating hyperlinks, buttons, and navigation elements.		

Content -

Sr.no.	Description of Practical	Practical Hours
1	Create and customize a new document using page size, margins, columns, and bleed settings.	2
2	Design a single-page layout using text frames and apply basic typography tools.	2
3	Import, place, and manage images using frame fitting and link options.	2
4	Create a multi-page document and apply master pages with automatic page numbering.	2
5	Create and apply paragraph styles, character styles, and object styles.	2
6	Design a tri-fold brochure using guides, columns, and text wrap options.	2
7	Design a professional magazine cover using layers, images, and typography hierarchy.	2
8	Create and format tables using table styles and cell styles.	2
9	Design an interactive document with hyperlinks, buttons, and navigation elements.	2
10	Prepare a document for print and digital output using preflight, bleed, and export options.	2
11	Project	10

Reference Books:

1. Adobe InDesign CC - Classroom in a Book - The Official Training Workbook from Adobe - 2017
2. Adobe InDesign CC: A Complete Course and Compendium of Features, by Stephen Laskevitch, 2019

B.Sc. Animation (Hon. with Research)

Semester: Seven

Syllabus
Semester-VII

Course Code: SCA41MML407		**Course Name:** Compositing Techniques
Course Category: Major Mandatory		
Credits: 3	**Teaching Scheme:**L-3 P-0	**Evaluation Scheme:** CA-60 ESE-40
Pre-requisites: Fundamental knowledge of digital compositing, image editing, and basic visual effects concepts.		
Course Objectives:		
Explain advanced compositing concepts and professional production workflows, apply advanced masking, keying, tracking, and integration techniques, analyze color, lighting, and depth cues for realistic visual storytelling, evaluate industry and research-based compositing solutions, prepare students for research-oriented studies and industry-level compositing practices		
Course Outcomes:		
CO1: Explain advanced compositing workflows, terminology, and production pipelines		
CO2: Apply advanced keying, rotoscoping, and tracking techniques for complex shots		
CO3: Analyze and implement advanced color correction and depth integration strategies		
CO4: Evaluate professional and research-based compositing case studies		
CO5: Design conceptual compositing solutions aligned with industry and academic research standards		

Contents –

Unit	Content	Teaching hours
1	**Advanced Compositing Overview** Review of compositing fundamentals, professional VFX pipelines, Color perception and display technologies, advantages of linear compositing, Managing conversions between color spaces, understanding gamma, gamut, and transfer functions, linear vs non-linear workflows, bit depth, HDR, and dynamic range.	9
2	**Advanced Masking & Rotoscoping** Advanced masking techniques, complex rotoscoping workflows, motion blur handling, edge refinement: softness, choking, and edge blending, Reducing chatter and temporal artifacts, spline-based interpolation, and procedural matte generation, Spline Based Interpolation: Using splines for smooth shape animation, Maintaining motion consistency across frames	9
3	**Advanced Keying & Tracking** Multi-pass keying: Core, edge, and detail mattes, Combining multiple keys for difficult footage workflows, handling screen imperfections, advanced chroma keying, planar tracking, camera stabilization, and shot cleanup techniques: Wire, rig, and marker removal, Patch creation and texture reconstruction.	9
4	**Color, Depth & Light Integration** Advanced color correction: Balancing foreground and background elements, Establishing visual mood and continuity grading, shot matching, depth-based compositing, atmospheric perspective: Creating depth using haze, fog, and light falloff, Enhancing scale and realism, light wrap techniques, and grain management.	9
5	**Industry & Research Applications** Professional case studies from film and OTT platforms, introduction to AI-assisted compositing tools, ethical considerations in VFX, sustainability in digital production, and emerging research trends.	9

Text Books:
1. Digital Compositing for Film and Video, Focal Press, Steve Wright, 2010.
2. The Art and Science of Digital Compositing, Morgan Kaufmann, Brinkmann, Ron, 2008

Reference Books:
1. The VES Handbook of Visual Effects, Focal Press, Okun, Jeffrey A., & Zwerman, Susan, 2020.
2. Digital Compositing in Depth, Addison-Wesley, Vaughan, John.
3. The Art of 3D Computer Animation and Effects, Wiley, Kerlow, Isaac.

Syllabus
Semester-VII

Course Code: SCA41MML408 **Course category:** Major Mandatory		**Course name:** 3D Architectural Design
Credits: 3	**Teaching Scheme:** L-3 P-0	**Evaluation Scheme:** CA-60 ESE-40
Pre-requisites: Basic understanding of 3D modeling, design fundamentals, and familiarity with any 3D software interface.		
Course Objectives:		
To develop industry-oriented skills in architectural modeling, lighting, and photorealistic rendering using V-Ray for professional architectural visualization.		
Course Outcomes:		
CO1: Explain architectural visualization workflows using 3D software		
CO2: Apply architectural modeling techniques to create 3D architectural spaces		
CO3: Analyze materials and lighting to achieve realistic renders		
CO4: Create photorealistic architectural visualizations using V-Ray		
CO5: Evaluate and present architectural projects as per industry standards		

Contents –

Unit	Content	Teaching hours
1	**Introduction to Architectural Visualization** Architectural visualization overview, Applications in architecture and real estate, ArchViz production pipeline, software interface and navigation, Project setup and unit scale, CAD drawing import and reference setup, Scene organization and layer management.	9
2	**Architectural Modeling Techniques** Architectural drawing interpretation, Modeling from floor plans and elevations, Walls, floors, ceilings, Doors, windows, and staircases, Interior space modeling, Exterior modeling basics, Furniture modeling fundamentals, Use of modifiers for architecture	9
3	**Materials, Texturing & V-Ray Shaders** Introduction to V-Ray renderer, V-Ray material structure, PBR workflow for architecture, Wood, glass, metal, fabric, concrete materials, UVW mapping techniques, Texture coordination and scaling, Realistic surface detailing	9
4	**Lighting & Rendering with V-Ray** Lighting principles for architecture, Daylight system (Sun & Sky), Interior lighting techniques, Artificial lights (V-Ray lights), Camera settings and composition, Render quality and noise control, Optimization for final output	9
5	**Architectural Presentation & Portfolio** Interior and exterior camera views, Composition and framing, Day and night scene setup, High-resolution rendering, Post-processing basics, Walkthrough and camera animation basics, Client-ready presentation, Architectural portfolio development	9

Text Books:
1. V-Ray for 3ds Max – Complete Guide, Bontempi, Fabio.
2. Architectural Rendering with 3ds Max and V-Ray, Manning, Christopher.
Reference Books:
1. Rendering with V-Ray, Cardoso, Jamie.
2. Autodesk Official Guide**,** 3ds Max Architectural Visualization

Syllabus
Semester-VII

Course Code: SCA41MMP406	**Course Name:** Practical Based on Compositing Techniques	
Course Category: Major Mandatory		
Credits: 1	**Teaching Scheme:**L-0 P-2	**Evaluation Scheme**: CA-30 ESE-20
Pre-requisites: Basic knowledge of compositing principles, rotoscoping and keying fundamentals, tracking basics, color correction concepts, and prior hands-on experience with a professional compositing software.		
Course Objectives:		
Apply advanced compositing tools through practical exercises, develop problem-solving skills for complex compositing tasks, and create professional-quality compositing outputs.		
Course Outcomes: At the end of the course, the students will be able to -		
CO1: Apply advanced masking and rotoscoping techniques.		
CO2: Execute complex chroma keying and tracking tasks.		
CO3: Analyze and correct color inconsistencies across shots.		
CO4: Integrate multiple visual elements using advanced compositing workflows.		
CO5: Produce a research-oriented or portfolio-ready composite output.		

Content:

Sr.no.	Description of the Experiment	Practical Hours
1	Review of Advanced Compositing Interface & Workflow: Study of professional compositing software interface, node/layer workflows, project setup, and pipeline organization.	2
2	Advanced Mask Creation and Refinement: Creation and refinement of complex masks using Bezier tools, feathering, edge control, and procedural mattes.	2
3	Complex Rotoscoping with Motion Blur: Rotoscoping moving objects with motion blur handling and temporal consistency.	2
4	Advanced Green Screen Keying Techniques: Execution of multi-pass chroma keying with spill suppression and edge refinement.	2
5	Multi-Layer Tracking and Stabilization: Application of point and planar tracking for multi-element shots and stabilization.	2
6	Shot Matching and Color Correction: Matching multiple shots using color correction tools, scopes, and grading techniques.	2
7	Depth and Atmospheric Effects Integration: Integration of depth cues, fog, haze, and atmospheric perspective for realism.	2
8	CG and Live-Action Element Integration: Compositing CG elements into live-action footage with proper scale, lighting, and perspective.	2
9	Research Case Study Analysis (Shot Breakdown) : Critical analysis and breakdown of a professional VFX shot from a research perspective.	2
10	AI-Assisted Compositing Tools (Intro): Hands-on exploration of AI-based tools for masking, keying, or cleanup workflows.	2
11	Mini Project / Research-Based Composite Shot: Design and execution of a complete composite shot with documentation and research justification.	10

Reference Book :

1. Digital Compositing for Film and Video, Wright, Steve
2. Foundry Nuke User Guide
3. Adobe After Effects Classroom in a Book

Syllabus
Semester-VII

Course code: SCA41MMP407 **category:** Major Mandatory	**Course name:** Practical Based on 3D Architectural Design	
Credits: 1	**Teaching Scheme:** L-0 P-2	**Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Basic understanding of 3D modeling, design fundamentals, and familiarity with any 3D software interface.		
Course Objectives:		
To develop industry-oriented skills in architectural modeling, lighting, and photorealistic rendering using V-Ray for professional architectural visualization.		
Course Outcomes: At the end of the course, the students will be able to -		
CO1: Demonstrate use of 3ds Max tools for architectural modeling		
CO2: Construct accurate architectural models from drawings		
CO3: Analyze lighting and materials to enhance realism		
CO4: Create photorealistic architectural renders using V-Ray		
CO5: Evaluate and present architectural visualization projects		

Content -

Sr.no.	Description of Practical	Practical Hours
1	3ds Max interface and workspace setup	2
2	Importing CAD drawings and scale setup	2
3	Implement Modeling basic architectural structures	2
4	Interior space modeling	2
5	Furniture and asset modeling	2
6	Creating V-Ray materials	2
7	Texture mapping and UVW mapping	2
8	Daylight exterior lighting setup	2
9	Interior lighting and camera setup	2
10	Final rendering and scene optimization	2
11	Project	10

Reference Books:

1. *Rendering with V-Ray*, Cardoso, Jamie**,** 2017
2. *3ds Max Architectural Visualization*, Autodesk Official Guide.

Syllabus
Semester-VII

Course Code: SCA41MEL405 **Course category:** Major Elective		**Course name:** Virtual Cinematography
Credits: 3	**Teaching Scheme:** L-3 P-0	**Evaluation Scheme:** CA-60 ESE-40
Pre-requisites: Basic knowledge of cinematography, visual storytelling, and introductory 3D/animation or media production concepts is required.		
Course Objectives:		
To equip students with conceptual understanding and practical skills in virtual cinematography, real-time production technologies, immersive storytelling, and virtual filmmaking workflows.		
Course Outcomes:		
CO1: Understand the fundamentals, history, and scope of virtual cinematography, including immersive media types, virtual production ecosystems, and industry applications.		
CO2: Demonstrate knowledge of real-time technologies such as game engines, LED volumes, motion capture, and camera-tracking systems used in virtual production.		
CO3: Apply virtual camera principles, visual grammar, and spatial storytelling techniques to design effective immersive and VR cinematic experiences.		
CO4: Analyze and evaluate software workflows, rendering pipelines, lighting strategies, and optimization techniques for performance and realism in virtual environments.		
CO5: Design and produce a complete virtual cinematography project by integrating pre-production planning, virtual shooting, real-time lighting, editing, and final presentation.		

Contents –

Unit	Content	Teaching hours
1	**Introduction to Virtual Cinematography** Definition & scope of virtual cinematography, history and evolution of virtual filmmaking, traditional vs virtual cinematography, Immersion, presence & proximity in virtual environments, Types of virtual content (360° video, VR films, XR), Virtual production ecosystems (LED volumes, game engines), Hardware basics: VR headsets, capture devices, Overview of real-time rendering pipelines, Ethical & perceptual challenges in VR/virtual cinema, Industry applications (films, advertising, experiences).	9
2	**Virtual Production & Real-Time Technologies** Concept of virtual production, LED volumes and virtual sets, Real-time rendering fundamentals, Game engines in filmmaking: Unreal Engine, Unity, Camera tracking systems & virtual camera rigs, In-camera VFX & live compositing, Motion capture & performance capture, Photogrammetry & 3D scanning, Lighting strategies for virtual sets, Pipeline integration with post-production.	9
3	**Virtual Camera, Visual Grammar & Storytelling** Virtual camera principles & controls, Composition in 360° and immersive spaces Shot design & visual grammar in VR, Camera movement within a virtual environment, Depth, focus & perceptual framing, spatial storytelling techniques, Editing and pacing for immersive content, Sound design principles in VR films User agency and interactive narratives, Case studies of virtual films and projects	9
4	**Tools & Software Workflows** Introduction to key software used for virtual reality, Virtual camera tools & plugins Asset creation & environment building, Material & lighting setup for real-time rendering, Simulation of realistic effects (particles, dynamics), Optimization for	9

	performance & realism, Integration of live footage with virtual elements, Rendering workflows for VR outputs, Exporting for different displays (HMD/online) Debugging & troubleshooting pipelines.	
5	**Production Projects & Evaluation** Pre-production: concept boards & VR storyboarding, techvis & previs planning Virtual photography exercises, Shooting with virtual cameras, Collaborative scene assembly, Real-time lighting and adjustment, Editing and immersive composition Playback, polishing and testing, Distribution formats & platforms, Final project evaluations & presentations	9

Text Books:
1. Virtual Reality Filmmaking: Techniques & Best Practices for VR Filmmakers – Celine Tricart,2017
2. Cinematic Virtual Reality: A Critical Study of 21st Century Approaches – Kath Dooley, 2022
Reference Books:
1. Screenwriting for Virtual Reality: Story, Space and Experience – Kath Dooley & Alex Munt, 2024

Syllabus
Semester-VII

Course Code: SCA41MEL406 **Course category:** Major Elective		**Course name:** Advanced Visual Effects
Credits: 3	**Teaching Scheme:** L-3 P-0	**Evaluation Scheme:** CA-60 ESE-40
Pre-requisites: Fundamentals of Animation and Multimedia.		
Course Objectives:		
Provide students with a strong understanding of advanced visual effects concepts, terminology, and production pipeline used in the animation and film industry.		
Course Outcomes:		
CO1: Understand advanced visual effects concepts, terminology, and production workflows used in professional VFX pipelines.		
CO2: Apply digital compositing, keying, rotoscopy, and simulation techniques using industry-standard VFX software**.**		
CO3: Analyze complex VFX shots and scenes by identifying lighting, compositing, simulation, and integration requirements.		
CO4: Evaluate visual realism, continuity, and technical quality of visual effects shots based on industry standards.		
CO5: Create complete visual effects shots and a professional demo reel suitable for entry-level industry roles.		

Contents –

Unit	Content	Teaching hours
1	**Fundamentals of Visual Effects** Evolution of Visual Effects, Types of VFX (2D, 3D, CGI, Compositing), Applications in films, OTT, games & ads, **VFX Pipeline & Production Workflow** Pre-production, Production, Post-production, Shot planning and breakdown, Industry workflow overview	9
2	**Advanced Compositing Concepts** Layer-based compositing, Masks and alpha channels, Rotoscoping techniques **Keying & Color Correction** Green/Blue screen keying, Color correction and matching, Basic tracking techniques	9
3	**Particle Systems** Particle fundamentals, fire, smoke, dust, sparks, Environmental effects **Dynamics & Physics-based Effects** Rigid body and soft body dynamics, Cloth and destruction basics, Forces and collisions	9
4	**3D Modeling & Texturing for VFX** Asset creation for VFX, UV mapping, Texturing workflow **Lighting & Rendering** Realistic lighting principles, Rendering concepts, Render passes for compositing	9
5	**Matte Painting & Environment Creation** Digital matte painting, Set extension, Environment design **Final VFX Shot & Portfolio** Final compositing, output & quality check, Showreel and portfolio preparation	9

Text Books:
1. The Visual Effects Handbook – Jeff Foster
2. Digital Compositing for Film and Video – Steve Wright

Syllabus
Semester-VII

Course code: SCA41MEP405	**Course name:** Practical Based on Virtual Cinematography	
Course category: Major Elective		
Credits: 1	**Teaching Scheme:** L-0 P-2	**Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Basic knowledge of cinematography, visual storytelling, and introductory 3D graphics or media production concepts.		
Course Objectives:		
To develop conceptual understanding and hands-on skills in virtual cinematography, real-time production, immersive storytelling, and virtual filmmaking workflows.		
Course Outcomes: At the end of the course, the students will be able to -		
CO1: Understand core concepts of virtual cinematography, immersive media types (360°, VR, XR), and real-time production pipelines.		
CO2: Apply knowledge of VR hardware, game engines, and real-time rendering systems to create basic virtual environments.		
CO3: Demonstrate virtual camera operation, composition techniques, and visual grammar for immersive and 360° storytelling.		
CO4: Analyze and evaluate lighting strategies, motion capture, in-camera VFX, and optimization techniques in virtual production.		
CO5: Design and produce a complete virtual cinematography project integrating pre-production, virtual shooting, rendering, and presentation.		

Content -

Sr.no.	Description of Practical	Practical Hours
1	Study of virtual cinematography concepts and immersive media types (360°, VR, XR).	2
2	Hands-on exploration of VR hardware and real-time rendering pipeline basics.	2
3	Creation of a virtual set using a game engine (Unreal Engine / Unity).	2
4	Virtual camera setup, controls, and cinematic shot capture in a virtual environment.	2
5	Composition and visual grammar exercises for 360° and immersive spaces.	2
6	Lighting design and illumination techniques for virtual sets and LED volume simulations.	2
7	Motion capture and performance capture integration in virtual scenes.	2
8	In-camera VFX and live-action footage integration with virtual environments.	2
9	Optimization, rendering, and exporting of immersive content for VR and online platforms.	2
10	Mini virtual cinematography project including pre-production, virtual shooting, editing, and presentation.	2
11	Project	10

Reference Books:
1. The VES Handbook of Visual Effects: Industry Standard VFX Practices, Focal Press, Okun, J. A., & Zwerman, S. (Eds.)
2. Digital Visual Effects in Cinema: The Seduction of Reality, *Rutgers University Press, Prince, S.*

Syllabus
Semester-VII

Course code: SCA41MEP406	**Course name:** Practical Based on Advanced Visual Effects	
Course category: Major Elective		
Credits: 1	**Teaching Scheme:** L-0 P-2	**Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Basic knowledge of computer graphics, digital imaging, and fundamentals of animation or multimedia.		
Course Objectives:		
To provide hands-on experience in visual effects production techniques, familiarize students with industry-standard VFX workflows and tools, develop practical skills in compositing, keying, tracking, and effects creation & enable students to create production-ready VFX shots and portfolios.		
Course Outcomes: At the end of the course, the students will be able to -		
CO1: Understand the evolution, types, and applications of visual effects in various media.		
CO2: Apply VFX production pipelines and shot breakdown techniques.		
CO3: Perform compositing tasks including keying, rotoscoping, masking, and tracking.		
CO4: Create basic VFX elements such as particles, dynamics, and 3D assets.		
CO5: Produce a complete VFX shot suitable for portfolio and show reel presentation.		

Content -

Sr.no.	Description of Practical	Practical Hours
1	Study and analyze the evolution and applications of Visual Effects in films, OTT platforms, games, and advertisements.	2
2	Prepare a VFX pipeline workflow chart showing pre-production, production, and post-production stages for a selected shot.	2
3	Perform layer-based compositing using multiple image/video layers with masks and alpha channels.	2
4	Execute manual rotoscoping to isolate a moving subject from background footage.	2
5	Perform green/blue screen keying and replace the background with appropriate visuals.	2
6	Apply basic color correction and color matching to integrate foreground and background elements realistically.	2
7	Perform motion tracking and insert text or a 3D object into a moving scene.	2
8	Create basic particle effects such as fire, smoke, dust, or sparks and composite them into footage.	2
9	Model and texture a simple 3D asset for VFX use, including UV mapping and rendering.	2
10	Create a final VFX shot integrating compositing, effects, and color grading, and present it as part of a showreel/portfolio.	2
11	Project	10

Reference Books:

1. Brinkmann, Ron. The Art and Science of Digital Compositing. Morgan Kaufmann
2. Gress, Jon. Digital Visual Effects and Compositing. New Riders.

Syllabus

Semester-VII

Course code: SCA41RML401		**Course name:** Research Methodology
Course category: Research Methodology		
Credits: 3	**Teaching Scheme:** L-3 P-0	**Evaluation Scheme:** CA-60 ESE-40
Pre-requisites: Basic understanding of subject fundamentals, elementary statistics, and academic reading and writing skills.		
Course Objectives:		
To develop an understanding of research methodology principles and techniques applicable to problem identification, analysis		
Course Outcomes: At the end of the course, the students will be able to -		
CO1: To develops the ability to identify research problems and formulate objectives and hypotheses.		
CO2: To familiarizes students with research design, data collection, and analysis techniques relevant to robotics.		
CO3: To enhances skills in technical writing, documentation, and research ethics.		
CO4: Analyze and apply statistical techniques such as data processing, descriptive statistics, correlation, regression, and hypothesis testing to interpret and validate research data.		
CO5: Evaluate research findings and create a structured research report or mini proposal using appropriate referencing styles, ethical practices, and computer-based research tools.		

Content -

Unit	Contents	Teaching Hours.
1	**Introduction to Research & Research Process:** Meaning of Research, objectives, motivation, and significance of research, Types of research (basic/applied, qualitative/quantitative, conceptual/empirical) Research methods vs. research methodology, Research Approaches, Significance of Research, Scientific method and research ethics, Steps in the research process, Criteria of Good Research, Problems Encountered by Researchers in India	9
2	**Research Problem Formulation & Research Design:** Identification and definition of research problems in engineering/robotics (Meaning and sources of research problems, Criteria for selecting a research problem, Defining and formulating research problems), Review of literature and research gap identification, Formulation of objectives and hypotheses, Research design: exploratory, descriptive, experimental, Features of a good research design	9
3	**Sampling Design & Data Collection Methods:** Sampling concepts, population, sample, sampling errors , Probability and non-probability sampling techniques (Sample size (basic concept)Types of sampling errors (Sampling error, Non-sampling error, Bias and sources of bias), Methods of data collection: observation, interview, questionnaire, experiments, Selection of appropriate sampling and data collection methods (Nature of research problem, Objectives of the study, Time, cost, and resource constraints, Accuracy and reliability requirements, Relevance to robotics and engineering research)	9
4	**Data Processing, Analysis & Hypothesis Testing:** Data processing (Editing, coding, classification, tabulation), Descriptive statistics) Measures of central tendency, Measures of dispersion, Correlation and regression, Hypothesis testing	9

	(Concepts and Procedure, parametric and non-parametric tests), Interpretation of Statistical results.	
5	**Research Reporting:** Interpretation of research results, Research report writing (Structure of research report technical paper, and project report), Referencing styles and bibliography, Plagiarism and ethical issues in research, Role of computers in research (Data analysis tools, Documentation and presentation tools), Preparation of a mini research proposal / report	9

Text Books :
1.C.R. Kothari — Research Methodology: Methods & Techniques 2.Ranjit Kumar — Research Methodology: A Step-by-Step Guide for Beginners
Reference Books: 1.Garg, B.L., Karadia, R., Agarwal, R., & Agarwal, U.K. — An Introduction to Research Methodology 2.Paul D. Leedy& Jeanne Ellis Ormrod — Practical Research: Planning and Design
Online Resources: 1.Alison – Essentials of Research Methodology

Syllabus
Semester-VII

Course Code: SCA41RMP401 **Course Name:** Practical based on Research Methodology **Course Category:** Research Methodology
Credits: 1 **Teaching Scheme:**L-0 P-2 **Evaluation Scheme**: CA-30 ESE-20
Pre-requisites: Research Methodology practical is a basic understanding of research design, data Collection methods, and fundamental statistical and analytical tools.
Course Objectives:
The Research Methodology course is to equip students with the skills to design, conduct, analyze, and interpret research systematically and ethically
Course Outcomes: At the end of the course, the students will be able to -
CO1: To develops the ability to identify research problems and formulate objectives and hypotheses.
CO2: To familiarizes students with research design, data collection, and analysis techniques relevant to Robotics.
CO3: To enhances skills in technical writing, documentation, and research ethics.
CO4: Analyze and apply statistical techniques such as data processing, descriptive statistics, correlation, regression, and hypothesis testing to interpret and validate research data.
CO5: Evaluate research findings and create a structured research report or mini proposal using Appropriate referencing styles, ethical practices, and computer-based research tools.

Content-

Sr.No.	Description of the Experiment	Practical Hours
1	Identify research papers from journals/conferences and prepare a structured literature review.	2
2	Select a domain in computer fraternity and define a clear research problem w Objectives.	2
3	Write research objectives and formulate null and alternative hypotheses.	2
4	Develop a suitable research design for a selected problem (Exploratory/descriptive/experimental).	2
5	Identify population, sample size, sampling technique, and justify the choice.	2
6	Design a questionnaire for data collection related to a computer fraternity problem.	2
7	Collect sample data using questionnaire/observation and enter data in Spreadsheet/software.	2
8	Perform basic statistical analysis (mean, median, standard deviation, Graphs).	2
9	Apply an appropriate statistical test (t-test / chi-square) and interpret results.	2
10	Prepare and present a mini research report standard research paper format.	2
11	Project:	10

Reference Book / Hand Books/ Lab Manual
Text Books : 1.C.R. Kothari Research Methodology: Methods & Techniques 2.Ranjit Kumar Research Methodology: A Step-by-Step Guide for Beginners
Reference Books: 1. Garg, B.L., Karadia, R., Agarwal, R., & Agarwal, U.K. An Introduction to Research Methodology 2.Paul D. Leedy& Jeanne Ellis Ormrod — Practical Research: Planning and Design
Online Resources: 1.Alison – Essentials of Research Methodology

Semester: Eight

Syllabus
Semester-VIII

Course code: SCA41MML408	**Course Name:** Gaming Techniques	
Course category: Major Mandatory		
Credits: 3	**Teaching Scheme:** L-3 P-0	**Evaluation Scheme:** CA-60 ESE-40
Pre-requisites: Basic knowledge of programming fundamentals, computer graphics concepts, and familiarity with digital media tools or interactive systems.		
Course Objectives:		
To provide students with a comprehensive understanding of game design principles and hands-on game development skills by integrating gameplay mechanics, programming techniques, audio-visual systems, testing, deployment, and business strategies for creating engaging and industry-ready digital games.		
Course Outcomes: At the end of the course, the students will be able to -		
CO1: Explain fundamental concepts of game design including design theories, MDA framework, game genres, player psychology, rules, feedback systems, and core elements such as mechanics, dynamics, and aesthetics.		
CO2: Apply game design principles to create balanced gameplay systems incorporating challenge, skill, flow, narrative structure, level design, and player motivation across different platforms.		
CO3: Analyze and implement gameplay programming techniques using game engines, including game loops, scripting, physics, AI behaviors, input handling, animation systems, and optimization strategies.		
CO4: Evaluate audio-visual, interaction, and UI/UX components in 2D and 3D games by integrating sound design, shaders, lighting, camera systems, particle effects, accessibility, and player feedback mechanisms.		
CO5: Design, test, deploy, and present a complete playable game prototype by applying play testing methods, debugging, analytics, monetization strategies, publishing workflows, and portfolio development practices.		

Contents -

Unit	Content	Teaching hours
1	**Introduction :** Game design ,principles of game design, game design theory, MDA, eight type of fun in game, visual style, gameplay, game genres and platforms (PC, consoles, mobile, VR/AR), core elements of games: mechanics, dynamics, aesthetics, Player psychology and motivation, game design terminology & principles, Rules, goals, feedback systems, balancing challenge, skill, and flow, Narrative and storytelling in games, level design basics.	9
2	**Game Development Tools & Engines :** Introduction to game engines, Setting up projects & IDE basics, asset pipelines (models, textures, audio), scene assembly & game object management, scripting fundamentals, physics engines & collision systems, Animation systems & state machines, UI/UX systems in games, Input handling (keyboard, mouse, touch, controllers), version control for game projects.	9
3	**Gameplay Programming & Techniques :** Game loop & frame update logic, character controllers & movement systems, AI basics: state machines, behavior trees, pathfinding, event systems & messaging, physics interactions & rigid body controls, particle systems & visual effects,	9

	procedural content generation, save/load systems and data persistence, optimization basics (FPS, memory, draw calls)	
4	**Audio, Graphics & Interaction :** Fundamentals of game audio & sound design, Implementing music, SFX, and audio triggers, shader basics & materials, Lighting & rendering techniques Camera systems (third-person, first-person, dynamic), UI design & HUD development, Feedback through visuals & audio, 2D vs 3D game workflows particle effects & post-processing, accessibility in game interaction.	9
5	**Game Testing, Deployment & Business :** Playtesting & iterative design, bug tracking & quality assurance, metrics & analytics for games, monetization strategies (ads, IAP, premium), user retention & engagement loops, publishing to platforms (Steam, App Store, Google Play), marketing basics for games, legal & ethical issues (licenses, IP, privacy), community building & social features, portfolio & demo reel creation.	9

Text Books :
1. The Art of Game Design: A Book of Lenses ,2014 -Jesse Schell
2. Unity in Action: Multiplatform Game Development in C# , Joe Hocking, 2018
3. Game Programming Patterns, Robert Nystrom, 2014.
4. Game Audio Implementation: A Practical Guide Using the Unreal Engine.

Syllabus
Semester-VIII

Course Code: SCA41MML409		**Course Name:** Advanced 3D Effects
Course category: Major Mandatory		
Credits: 3	**Teaching Scheme:** L-3 P-0	**Evaluation Scheme:** CA-60 ESE-40
Pre-requisites: Basic understanding of 3D fundamentals, animation principles, particle systems, and familiarity with any node-based 3D software.		
Course Objectives:		
To develop advanced procedural thinking and professional VFX skills using software for industry-level visual effects production.		
Course Outcomes:		
CO1: Explain advanced VFX pipelines and procedural workflows in Software		
CO2: Apply particle and dynamics systems to generate visual effects		
CO3: Analyze simulations to improve realism and performance		
CO4: Create complex 3D effects such as fire, smoke, fluids, and destruction		
CO5: Evaluate and present professional VFX shots for portfolios		

Contents –

Unit	Content	Teaching hours
1	**VFX Pipeline & Fundamentals** Overview of VFX industry and production pipeline, Role of procedural workflows in VFX, software interface and navigation, Node-based workflow fundamentals, Geometry objects and attributes, Transformations and grouping, Scene organization and project setup	9
2	**Particle Systems & Procedural Effects** Particle system fundamentals, POP networks overview, Particle emission techniques, Forces, collisions, and constraints, Particle attributes and lifespan, Instancing particles, Procedural effects (dust, sparks, debris).	9
3	**Rigid Body Dynamics & Destruction** Rigid Body Dynamics (RBD) concepts, Fracturing methods, Constraints and glue networks, Collision geometry setup, Destruction workflows, Secondary simulations (debris), Simulation caching and optimization.	9
4	**Fluid, Smoke & Fire Simulations** Pyro FX fundamentals, Smoke and fire simulations, Explosion effects, FLIP fluid simulation basics, Vellum introduction (cloth & soft bodies), Simulation control and refinement, Visualization and preview techniques.	9
5	**VFX Look Development & Shot Presentation** Lighting for VFX shots, Shading and materials, Camera setup and composition, Rendering basics (Mantra / Karma), Render passes and AOVs, Export for compositing, Portfolio and showreel preparation	9

Text Books:

1. Houdini Foundations – SideFX, Lammers, Kenny,
2. VES Handbook of Visual Effects – Visual Effects Society,

Reference Books:

1. *The Art and Science of Digital Compositing,* Brinkmann, Ron, Morgan Kaufmann publisher,2008

Syllabus
Semester-VIII

Course code: SCA41MMP408 **Course name:** Practical Based on Gaming Techniques **Course category:** Major Mandatory		
Credits: 1	**Teaching Scheme:** L-0 P-2	**Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Basic knowledge of computer programming, computer graphics fundamentals, and familiarity with digital media or interactive systems.		
Course Objectives:		
To provide students with theoretical knowledge and practical skills in game design, gameplay programming, audio-visual systems, testing, deployment, and business aspects of modern digital games.		
Course Outcomes: At the end of the course, the students will be able to -		
CO1: Understanding game design principles, MDA framework, player psychology, game genres, platforms, and core elements of gameplay.		
CO2: Apply game development tools, engines, asset pipelines, and scripting fundamentals to create functional game environments.		
CO3: Develop gameplay systems including player controllers, AI behaviors, physics interactions, and optimization techniques.		
CO4: Design and integrate audio, graphics, camera systems, UI/HUD, visual effects, and accessibility features to enhance player experience.		
CO5: Evaluate games through playtesting and analytics, implement monetization and deployment strategies, and produce a polished, portfolio-ready game build.		

Content -

Sr.no.	Description of Practical	Practical Hours
1	Prepare a Game Design Document (GDD) outlining game concept, mechanics, rules, goals, and player motivation.	2
2	Set up a game project using a game engine and configure the development environment and asset pipeline.	2
3	Assemble a game scene by importing assets and managing game objects and hierarchies.	2
4	Implement player controls with input handling, movement logic, and collision detection.	2
5	Develop basic enemy or NPC AI using state machines or pathfinding techniques.	2
6	Design and implement a playable level focusing on challenge–skill balance and player flow.	2
7	Create and integrate particle systems and visual effects for gameplay feedback.	2
8	Implement audio systems including background music, sound effects, and event-based audio triggers.	2
9	Design and integrate user interface and HUD elements for player interaction and feedback.	2
10	Conduct playtesting, debugging, optimization, and deploy a playable game build for a target platform.	2
11	Project	10

Reference Books:
1. *The Art of Game Design: A Book of Lenses***,** Jesse Schell, CRC Press.
2. *Game Programming Patterns,* Genever Benning, Robert Nystrom

Syllabus
Semester-VIII

Course code: SCA41MMP409 **category:** Major Mandatory	**Course name:** Practical Based on Advanced 3D Effects	
Credits: 1	**Teaching Scheme:** L-0 P-2	**Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Basic understanding of 3D fundamentals, animation principles, particle systems, and familiarity with any node-based 3D software.		
Course Objectives:		
To develop advanced procedural thinking and professional VFX skills using Houdini for industry-level visual effects production.		
Course Outcomes: At the end of the course, the students will be able to -		
CO1: Demonstrate effective use of software procedural tools.		
CO2: Construct dynamic simulations using particles and solvers		
CO3: Analyze simulation behavior for realism and optimization		
CO4: Create advanced VFX shots using multiple simulation techniques		
CO5: Evaluate and present VFX work for professional portfolios		

List of Practical -

Sr.no.	Description of Practical	Practical Hours
1	Software interface and node-based workflow	2
2	Geometry creation and attribute handling	2
3	Basic particle emission setup	2
4	Particle forces and collisions	2
5	Rigid body simulation setup	2
6	Fracture and destruction simulation	2
7	Create Smoke simulation using Pyro FX	2
8	Design Fire or explosion effect	2
9	Create Fluid simulation (FLIP basics)	2
10	Apply Lighting, rendering, and shot output	2
11	Project	10

Reference Books:

1. Brinkmann, Ron**.** *The Art and Science of Digital Compositing*

Syllabus
Semester-VIII

Course Code: SCA41MEL407		**Course name:** 3D Element Creation
Course category: Major Elective		
Credits: 3	**Teaching Scheme:** L-3 P-0	**Evaluation Scheme:** CA-60 ESE-40
Pre-requisites: Basics of 3D Modeling, Understanding of polygon modeling, Fundamentals of texturing and materials.		
Course Objectives:		
To develop industry-ready 3D assets, understand professional asset pipelines, create optimized and production-friendly models, and prepare students for prop and asset artist roles.		
Course Outcomes:		
CO1: Explain 3D element creation workflows in software		
CO2: Apply polygonal and procedural modeling techniques to create 3D elements		
CO3: Analyze references to design accurate and production-ready assets		
CO4: Create realistic and stylized 3D assets suitable for animation or games		
CO5: Evaluate 3D element quality for portfolio and industry standards		

Contents –

Unit	Content	Teaching hours
1	**Introduction to 3D Element Creation in Cinema 4D:** Software interface and navigation, Project setup and organization, Types of 3D elements (props, assets, environment pieces), Reference collection & asset planning, Object hierarchy and layer management	9
2	**Hard-Surface Modeling Techniques:** Polygon modeling basics, Edge flow & clean topology, Boolean modeling techniques, Hard surface props (mechanical, architectural elements), Modifiers and deformers	9
3	**Organic & Stylized Element Modeling:** Organic prop modeling, Stylized vs realistic modeling, Sculpting in software (via Sculpt tool or integration), Detail enhancement (bevel, subdivision, etc.), Silhouette & shape language	9
4	**Texturing & Material Application:** UV mapping basics, Material creation in software (Standard & Physical), Procedural shaders, PBR workflow for assets, Texture assignment and layering	9
5	**Optimization & Presentation:** Low-poly optimization, Naming conventions and asset packaging, Lighting and rendering (Physical Renderer / Redshift), Turntable rendering, Portfolio-ready presentation, Industry-standard evaluation	9

Text Books:
1. Cinema 4D: The Artist's Project Sourcebook – 3D, hris Marrin.
2. Cinema 4D R23 Basics – Packt, Jeremy Cox.
Reference Books:
1. Cinema 4D Official Guide – Maxon

Syllabus
Semester-VIII

Course Code: SCA41MEL408	**Course name:** Advanced Motion Capture Technique
Course category: Major Elective	
Credits: 3 **Teaching Scheme:** L-3 P-0	**Evaluation Scheme:** CA-60 ESE-40
Pre-requisites: Fundamental understanding of 3D animation concepts.	
Course Objectives:	
To equip students with advanced theoretical knowledge and practical skills in motion capture using software, enabling them to import, edit, retarget, optimize, and integrate mocap data efficiently for film, game, and virtual production workflows.	
Course Outcomes:	
CO1: Understand advanced motion capture concepts, systems, and industry pipelines used in animation and virtual production.	
CO2: Apply effective use of software interface, tools, and workflows for motion capture projects.	
CO3: Analyze motion capture data to identify errors and apply appropriate cleanup and correction techniques.	
CO4: Create motion retargeting, animation layers, and story tools to enhance captured performances.	
CO5: Understanding production-ready motion capture animations suitable for film, game, and real-time.	

Contents –

Unit	Content	Teaching hours
1	**Advanced Motion Capture Fundamentals** Motion capture principles, Performance capture concepts, Industry use cases (Film, Games, Virtual Production) **Motion Capture Pipeline** Role of Motion Builder in production, Motion capture workflow overview Supported file formats (FBX, BVH, C3D)	9
2	**Software Interface and Workflow** User interface overview, Viewers, Asset Browser, Navigator, Scene management and takes, Project organization **Characterization & Control Rig in software** Skeleton requirements for mocap. Character definition and mapping, Creating and editing Control Rigs, FK/IK systems	9
3	**Importing and Managing Motion Capture Data** Importing mocap files, Working with multiple takes Naming conventions and data organization **Motion Editing and Cleanup Techniques** Keyframe editing tools, Noise reduction and filtering, Foot sliding correction Body alignment and balance fixes	9
4	**Motion Retargeting in MotionBuilder** Source and target character setup, Scale and proportion adjustment, Retargeting mocap to different characters, Common retargeting issues and solutions **Animation Layers, Story Mode & Blending** Animation layers workflow, Additive and override layers, Story mode for non-linear animation, Blending multiple motion clips	9
5	**Real-Time Motion Capture** Live motion capture concepts, Real-time data streaming overview, MotionBuilder to Unreal/Unity pipeline (conceptual), Performance capture basics **Production Workflow, Case Studies & Optimization**	9

	Film and game production case studies Optimizing mocap for final output, Exporting animations for Maya/Game Engines Industry best practices	

Text Books:
1. *Motion Capture in Performance* , Clayton South
2. *MotionBuilder Official Documentation & Help Guide*, Autodesk

Syllabus
Semester-VIII

Course code: SCA41MEP407	**Course name:** Practical Based on 3D Element Creation	
Category: Major Elective		
Credits: 1	**Teaching Scheme:** L-0 P-2	**Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Basics of 3D Modeling, Understanding of polygon modeling, Fundamentals of texturing and materials.		
Course Objectives:		
To develop industry-ready 3D assets, understand professional asset pipelines, optimized and production-friendly models.		
Course Outcomes: At the end of the course, the students will be able to -		
CO1: Demonstrate effective use of software tools for modeling 3D elements		
CO2: Construct accurate hard surface and organic assets		
CO3: Apply UV mapping and materials to 3D props		
CO4: Analyze topology, edge flow, and geometry optimization for production-ready models		
CO5: Create stylized and realistic 3D elements suitable for animation, games, and visualization		

Content -

Sr.no.	Description of Practical	Practical Hours
1	Cinema 4D interface and project setup	2
2	Reference gathering & asset planning	2
3	Basic polygon modeling	2
4	Hard surface modeling (props, environment)	2
5	Organic or stylized prop modeling	2
6	Sculpting and detail enhancement	2
7	UV mapping practice	2
8	Material assignment & texturing	2
9	Lighting & turntable setup	2
10	Rendering & portfolio presentation	2
11	Project	10

Reference Books:

1. Cinema 4D Official Guide – Maxon

Syllabus
Semester-VIII

Course code: SCA41MEP408 **Course name:** Practical Based on Advanced Motion Capture Technique
Category: Major Elective
Credits: 1 **Teaching Scheme:** L-0 P-2 **Evaluation Scheme:** CA-30 ESE-20
Pre-requisites: Basic knowledge of 3D animation principles, human anatomy for animation, and familiarity with any 3D software
Course Objectives:
To develop professional competency in using 3D software for advanced motion capture workflows, including editing, retargeting, real-time integration, and production-ready animation for film, games, and virtual production.
Course Outcomes: At the end of the course, the students will be able to -
CO1: Understand motion capture principles, performance capture concepts, and industry applications in film, games, and virtual production.
CO2: Apply Interface, tools, and workflow to import, organize, and manage motion capture data effectively.
CO3: Analyze and clean motion capture data using keyframe editing, filtering, and body alignment techniques.
CO4: Evaluate and resolve motion retargeting challenges between source and target characters with varying proportions.
CO5: Create production-ready animations by blending, layering, and exporting optimized mocap data for real-time engines and 3D pipelines.

Content -

Sr.no.	Description of Practical	Practical Hours
1	Hands-on exploration of MotionBuilder UI, viewers, asset browser, navigator, and project setup.	2
2	Importing and inspecting FBX, BVH, and C3D files; comparing data structure and use cases.	2
3	Defining character skeletons and mapping bones using MotionBuilder characterization tools.	2
4	Creating and editing control rigs; switching between FK and IK systems for animation control.	2
5	Working with multiple takes, naming conventions, scene organization, and data management.	2
6	Editing animation curves, adjusting timing, and refining motion using F-Curves.	2
7	Noise reduction, filtering, foot sliding correction, and body balance fixes.	2
8	Retargeting motion from source to target characters with scale and proportion adjustments.	2
9	Creating additive and override layers, using Story Mode, and blending multiple motion clips.	2
10	Conceptual live mocap workflow, MotionBuilder to Unreal/Unity pipeline, and exporting animations for Maya/game engines following industry best practices.	2
11	Practical	10

Reference Books:
1. *The Animator Toolkit for MotionBuilder* by Brad Clark & Chad Moore.