ALAGAPPA UNIVERSITY

(Accredited with A+ Grade by NAAC (CGPA: 3.64) in the Third Cycle, Graded as Category-I University and granted autonomy by MHRD-UGC)

DIRECTORATE OF COLLABORATIVE PROGRAMMES

Bachelor of Science in Game Art and Design

Regulations and Syllabus

[For those who join the Course in July 2023 and after]

CHOICE BASED CREDIT SYSTEM

Regulations and Syllabus

GENERAL INSTRUCTIONS AND REGULATIONS

B.Sc. Game Art & Design conducted by Alagappa University, Karaikudi, Tamil Nadu through its Collaborative Institution.

Applicable to all the candidates admitted from the academic year **2023** onwards.

1. **Eligibility:**

   A pass in the Higher Secondary Examination (HSC) conducted by the Government of Tamil Nadu, or an examination accepted as equivalent thereto by the Syndicate for admission to this programme.

2. **For the Degree:**
   The candidates shall have subsequently undergone the prescribed program of study in an institute for not less than three academic years, passed the examinations prescribed and fulfill such conditions as have been prescribed thereof.

3. **Admission:**
   Admission is based on the marks in the qualifying examination.

4. **Duration of the course:**
   The course shall extend over a period of **Three years** under Semester pattern.

5. **Standard of Passing and Award of Division:**
   a. Students shall have a minimum of 40% of total marks of the University examinations in each subject. The overall passing minimum is 40% both in aggregate of Continuous Internal Assessment and external in each subject.
   b. The minimum marks for passing in each theory / Lab course shall be 40% of the marks prescribed for the paper / lab.
   c. A candidate who secures 40% or more marks but less than 50% of the aggregate marks prescribed for three years taken together, shall be awarded **THIRD CLASS.**
   d. A candidate who secures 50% or more marks but less than 60% of the aggregate marks prescribed for three years taken together, shall be awarded **SECOND CLASS.**
   e. A candidate who secures 60% or more of the aggregate marks prescribed for three years taken together, shall be awarded **FIRST CLASS.**
   f. Only Part-III subjects will be considered for the University academic ranking purpose.
   g. The Practical / Project shall be assessed by the two examiners, by an internal examiner and an external examiner.

6. **Continuous internal Assessment:**
   a. Continuous Internal Assessment for each paper shall be by means of Written Tests, Assignments, Class tests and Seminars
   b. **25 marks** allotted for the Continuous Internal assessment is distributed for Written Test, Assignment, Class test and Seminars.
   c. Internal Assessment - Break-Up of Marks, suggested pattern (Faculty may change the pattern, according to the subject and need)
      a. Two Internal Tests (choose one best out of two) – 50%
      b. Model Test (One model test) – Nil – Should be conducted prior to the University examination. It is a mandate.
      c. Assignments – 25%
      d. Seminar / Case Study – 25%

d. Conduct of the continuous internal assessment shall be the responsibility of the concerned faculty.
e. The continuous internal assessment marks should be submitted to the University at the end of every semester, before the commencement of Semester Exams.
f. The valued answer papers/assignments should be given to the students after the valuation is over and they should be asked to check up and satisfy themselves about the marks they have scored.
g. All mark lists and other records connected with the continuous internal assessments should be in the safe custody of the institution for at least one year after the assessment.

7. Attendance:

Students must have earned 75% of attendance in each course for appearing for the examination.

Students who have earned 74% to 70% of attendance have to apply for condonation in the prescribed form with the prescribed fee.

Students who have earned 69% to 60% of attendance have to apply for condonation on Medical grounds in the prescribed form with the prescribed fee along with the medical certificate / relevant documents.

Students who have below 60% of attendance are not eligible to appear for the examination. They shall re-do the semester(s) after completion of the programme.

8. Examination:

Candidate must complete course duration to appear for the university examination. Examination will be conducted with concurrence of Controller of Examinations as per the Alagappa University regulations. **University may send the representatives as the observer during examinations.** University Examination will be held at the end of the each semester for duration of 3 hours for each subject. Certificate will be issued as per the AU regulations. **Hall ticket will be issued to the students at the end of every semester after submitting "No Dues" certificate to the exam cell, under the aegis of Controller of Examinations of the AU.**

9. Question Paper pattern:

Maximum: 75 Marks	Duration: 3Hours
Part A - Short answer questions with no choice	: 10 x 02=20
Part B –Brief answer with either or type	: 05 x 05=25
Part C- Essay – type questions of either / or type	: 03 x 10=30

10. Miscellaneous

a. Every student should possess the prescribed text book for all the subjects, through-out the semester for their theory/lab classes.
b. Every student would be issued an Identity card by the institute/university to identify his/her admission to the course.
c. Every student shall access the library and internet (wi-fi) facilities provided for the self-development and career-development.
d. Every student who successfully completes the course within the stipulated time period would be awarded the degree by the University.

11. Fee structure

Course fee shall be as prescribed by the University and 50% of the course fee should be disbursed to University. Special fees and other fees shall be as prescribed by the Institution and the fees structure must be intimated to the University. Course fees should be only by Demand draft / NEFT and AU has right to revise the fees accordingly.

Semester Pattern

Pattern	Course Fee payment deadline
Semester	Fee must be paid before 10th September of the academic year

12. Other Regulations:

Besides the above, the common regulation of the University shall also be applicable to this programme.

828 – B.Sc.,Game Art and Design										
Sem.	**Part**	**Course Code**	**Course Code**	**Title of the Paper**	**T/P**	**Cr.**	**Hrs./ Week**	**Max. Marks**		
								Int.	**Ext.**	**Total**
I	I	82811T/ 11H/11F	T/OL	Tamil /Other Languages -I	T	3	6	25	75	100
	II	82812	E	General English-I	T	3	6	25	75	100
	III	82813	Core 1	Fundamentals of Game Art	T	4	4	25	75	100
		82814	Core 2	Game Art - Practical	P	4	6	25	75	100
		82815	Allied 1	Introduction to Visual Communication	T	3	3	25	75	100
		82816	Allied 2	Art Visualization - Practical	P	2	3	25	75	100
	IV	82817	SEC -I	Value Education	T	2	2	25	75	100
				Library			-			
				Total		**21**	**30**	**175**	**525**	**700**
II	I	82821T	T/OL	Tamil/Other Languages-II	T	3	6	25	75	100
	II	82822	E	General English-II	T	3	6	25	75	100
	III	82823	Core 3	Design Study	T	4	4	25	75	100
		82824	Core 4	Game Design - Practical	P	4	5	25	75	100
		82825	Allied 3	Critical Studies For Games	T	3	3	25	75	100
		82826	Allied 4	Critical Studies For Games - Practical	P	3	3	25	75	100
	IV	82827	SEC -II	Environmental Studies	T	2	2	25	75	100
				Library			1			
		82828A 82828B		Internship/ Mini Project	I/ PR	2		25	75	100
				Total		**24**	**30**	**200**	**600**	**800**
III	I	82831T	T/OL	Tamil/Other Languages-III	T	3	6	25	75	100
	II	82832	E	General English-III	T	3	6	25	75	100
	III	82833	Core 5	Game Production	T	3	3	25	75	100
		82834	Core 6	Design & Communication for Game Design	T	3	3	25	75	100
		82835	Core 7	Design & Communication for Game Design - Practical	P	3	3	25	75	100
		82836	Allied 5	3D Digital Art for Games	T	3	3	25	75	100
		82837	Allied 6	3D Digital Art for Games -	P	2	2	25	75	100

				Practical						
	IV	82838	SEC -III	Entrepreneurship	T	2	2	25	75	100
		82839A 82839B 82839C	NME- I	1.Adipadai Tamil	P	2	2	25	75	100
				2.Advance Tamil	T					
				3.IT Skills for Employment	T					
				4. MOOC'S	T					
				Total		**24**	**30**	**225**	**675**	**900**
IV	I	82841T	T/OL	Tamil /Other Languages-IV	T	3	6	25	75	100
	II	82842	E	General English-IV	T	3	6	25	75	100
	III	82843	Core 8	Procedural Modeling for Games	T	4	4	25	75	100
		82844	Core 9	Level Design for Game	T	4	4	25	75	100
		82845	Core 10	Level Design for Game - Practical	P	3	3	25	75	100
		82846	Allied 7	3D Character Design for Game	T	3	3	25	75	100
		82847	Allied 8	3D Character Design for Game-Practical	P	2	2	25	75	100
	IV	82848A 82848B 82848C	NME- II	1.Adipadai Tamil	P	2	2	25	75	100
				2.Advance Tamil	T					
				3. Small Business Management	T					
				4. MOOC'S	T					
		82849		Internship	I	2	-	25	75	100
				Total		**26**	**30**	**225**	**675**	**900**
V	III	82851	Core 11	Business of Media	T	4	4	25	75	100
		82852	Core 12	Portfolio & Presentation	T	4	4	25	75	100
		82853A 82853B 82853C	DSE 1	1. Advanced Illustration 2. Figure Modeling 3. Mech Design	T	4	4	25	75	100
		82854A 82854B 82854C	DSE 2	1. Creature Sculpt 2. Hardsurface Sculpting 3. 3D Concept Sculpting	T	4	4	25	75	100
		82855A 82855B 82855C	DSE 3	1. Live With Game Engine 2. VR Game Design 3. AR Game Design	P	4	6	25	75	100
		82856	Core 13	Portfolio & Presentation - Practical	P	3	6	25	75	100
				Career development/employability			2			

				skills						
				Total		**23**	**30**	**150**	**450**	**600**
VI	III	82861	Core 14	Game Rigging Techniques	T	4	4	25	75	100
		82862	Core 15	Real Time Game FX	T	4	4	25	75	100
		82863	Core 16	Game Rigging Techniques - Practical	P	4	6	25	75	100
		82864A 82864B 82864C	DSE 4	1 . Visual Scripting 2 . Game Sound Design/ SFX 3. Game Cinematics	P	4	4	25	75	100
		82865A/ 82865B	Core 17	Project/ Dissertation	PR/ D	6	12	25	75	100
				Total		**22**	**30**	**125**	**375**	**500**
				Grand Total		**140**	**180**	**1100**	**3300**	**4200**

I – Semester-Core Course				
Course code: 82813	**Fundamentals of Game Art**	**T**	**Credits: 4**	**Hours: 4**
Course Objectives	1. To learn the basics of fundamental artistic techniques and concepts. 2. To enable students to understand and apply the principles of perspective drawing effectively 3. To provide them with an understanding of the structure and function of living organisms 4. To Develop a deep understanding of color principles and how to effectively use color in Design 5. To acquaint students with history of art and its essentials			
Unit I	Free strokes-Dots-Hatching and diverging lines-understanding lines-surface and areas superimposed levels-surface limits-geometric Structure-Repeated Image-the progressive method, shading, lighting			
Unit II	Perspective views, types of perspective views, linear perspectives vs aerial perspective, perspective terminology, horizon line/eye level , station point , picture plane , vanishing point, linear perspective construction methods, one point perspective , two point perspective , three point perspective.			
Unit III	Figure drawing basics, Essentials of human figure drawing, Proportion and Gesture, Simplifying body parts in to 2D shapes, Relative proportion of various parts of the body, Constructing the front view using basic shapes, stick figure, line of action, balance, contour drawing(different poses), Cylindrical forms (front and side view), foreshortening, overlapping, balance, quick sketches, study from live figure.			
Unit IV	Introduction to RYB mode, hue, value, saturation, color mixing, create a color wheel, primary, secondary and tertiary colors, Grey scale, understanding color combinations, color contrast, color psychology			
Unit V	Prehistoric- Development of Art – Early civilization Paleolithic Age, Mesolithic Age, Neolithic Age ,Valley civilization, Indian Art - Mughal and Rajasthani miniature, Painting Madhubani, Kangra and Warli painting. Ajanta & Ellora Cave paintings, Manuscript Painting (Pala, Jain) Company Painting, Far Eastern Art- (Art of China and Japan) Hand Scroll or Hanging Scroll, Pottery, Bronze Art, Calligraphy—Japanese Woodblock printing, Byobu, Mandala, Ukiyo-e. Western Art - Medieval- Focus on religious (Christian) themes; Hieratic Scale or Mental Perspective, Gothic, Renaissance, Classicism-Greek and Roman, Rococo Neoclassicism, Impressionism, Post Impressionism, Expressionism- Abstract, Dadaism, Surrealism, Pop Art, Optical art, Romanticism			

Reference and Text Books:

Lauricella, M. (2018). *morpho Anatomy for Artists*. Rocky Nook.
Perard, V. (2004). *Anatomy and drawing*. Courier Corporation
Bammes, G. (2004). *The artist's guide to human anatomy*. Courier Corporation
Carter, D. (2011). *Anatomy for the Artist*. Parragon Publishing India.
Chari, A. (2005). *Figure Study Made Easy.* Grace Prakashan.
Pooke, G., & Newall, D. (2007). *Art History: The Basics*. Routledge.

Online Resources

https://www.amazon.in/Art-History-Basics-Diana-Newall/dp/0415373085
https://amzn.eu/d/8cvW4SA
https://amzn.eu/d/gcqbji0
https://amzn.eu/d/2k7vEQU

Course Outcomes		Knowledge level
CO-1	To learn the basics of fundamental artistic techniques and concepts.	**K2**
CO-2	To enable students to understand and apply the principles of perspective drawing effectively	**K2,K3**
CO-3	To provide them with an understanding of the structure and function of living organisms	**K3**
CO-4	To Develop a deep understanding of color principles and how to effectively use color in Design	**K3,K6**
CO-5	To acquaint students with history of art and its essentials	**K1,K2**

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S(3)	S(3)	L(1)	L(1)	M(2)	L(1)	L(1)	S(3)	L(1)	L(1)
CO2	S(3)	S(3)	M(2)	L(1)	S(3)	M(2)	L(1)	L(1)	L(1)	L(1)
CO3	S(3)	L(1)	L(1)	L(1)	S(3)	L(1)	L(1)	L(1)	L(1)	L(1)
CO4	S(3)	S(3)	S(3)	L(1)	S(3)	M(2)	L(1)	L(1)	L(1)	L(1)
CO5	S(3)	S(3)	S(3)	L(1)	S(3)	S(3)	L(1)	L(1)	L(1)	L(1)
W.AV	3	2.6	2	1	2.8	1.8	1	1.4	1	1

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S(3)	S(3)	S(3)	M(2)	M(2)
CO2	S(3)	S(3)	M(2)	L(1)	S(3)
CO3	S(3)	S(3)	S(3)	M(2)	S(3)
CO4	S(3)	M(2)	S(3)	M(2)	S(3)
CO5	S(3)	M(2)	M(2)	M(2)	M(2)
W.AV	3	2.6	2.6	1.8	2.6

S–Strong (3), M-Medium (2), L-Low (1)

I-Semester- Core Course				
Course Code: 82814	**Game Art - Practical**	**P**	**Credits: 4**	**Hours: 6**

Objective	**Understand the role of game art in video game development.** **To Develop skills in creating concept art to define the visual style and direction of a game.** **To Learn the principles of character design for video games**. **To explore environment design for game levels and worlds.** **Gain knowledge and skills to create game art assets for a small game project**

1. Overview of game art disciplines, industry expectations, and the creative process.
2. Concept sketching, mood boards, Storyboards, Callout Sheets, and creating a visual narrative.
3. Character anatomy, personality expression, and concept-to-model workflow.
4. Creating immersive game environments, level layout, Level design fundamentals, Game environment art, Grayscale to color.
5. gray boxing, and world-building. Finalizing 2D game assets, optimization for real-time rendering, and presentation of the art in-engine.

Outcome	1. Able to understand and analyze different roles of a game artist in game development 2. Able to implement the skills required in creating concept art to define the visual style and direction of a game. 3. Able to develop unique character concepts with the given set of information 4. Able to create playable and very interactive game environments, levels for any genre of games. 5. To learn how to develop optimised an entire 2D game ready asset pack

Reference and Text Books:

Dille, F., & Platten, J. Z. (2008). The Ultimate Guide to Video Game Writing and Design.
3DTotal Publishing. (2009). Digital Painting Techniques: Volume 1.
Williams, R. (2009). The Animator's Survival Kit.

Online Resources

https://www.amazon.in/Digital-Painting-Techniques-Practical-Masters/dp/0240521749
https://www.amazon.in/Animators-Survival-Kit-Richard-Williams/dp/0571238343
https://www.amazon.in/Ultimate-Guide-Video-Writing-Design/dp/158065066X

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M(2)	S(3)	S(3)	S(3)	M(2)	M(2)	M(2)	M(2)	L(1)	M(2)
CO2	S(3)	S(3)	S(3)	L(1)	S(3)	M(2)	M(2)	M(2)	L(1)	M(2)
CO3	S(3)	S(3)	S(3)	L(1)	M(2)	M(2)	M(2)	M(2)	L(1)	M(2)
CO4	S(3)	S(3)	S(3)	L(1)	S(3)	S(3)	M(2)	M(2)	L(1)	M(2)
CO5	S(3)	S(3)	S(3)	S(3)	M(2)	M(2)	M(2)	M(2)	L(1)	M(2)
W.AV	2.8	3	3	1.8	2.4	2.2	2	2	1	2

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M(2)	M(2)	M(2)	M(2)	M(2)
CO2	S(3)	S(3)	S(3)	M(2)	S(3)
CO3	S(3)	S(3)	S(3)	M(2)	S(3)
CO4	S(3)	S(3)	S(3)	M(2)	S(3)
CO5	S(3)	S(3)	S(3)	M(2)	S(3)
W.AV	2.8	2.8	2.8	2	2.8

S–Strong (3), M-Medium (2), L-Low (1)

I – Semester-Allied					
Allied	**Course code: 82815**	**Introduction to Visual Communication**	**T**	**Credits: 3**	**Hours: 3**
Course Objectives	1. This form of communication relies heavily on the use of visual aids to help individuals understand and interpret the intended message. 2. The main objective of understanding visual communication is to equip individuals with the knowledge and skills needed to effectively communicate and interpret messages through visual means. 3. The study of signs and symbols 4. It involves understanding the dynamics of communication, its role in shaping public sentiment, and its influence on various aspects of society. 5. To acquaint students with a wide range of goals related to understanding, analyzing, and effectively utilizing mass media as a means of communication**.**				
Unit I	Introduction to visual communication : Clarity and Comprehension, Engagement, Conveying Emotions, Enhancing Retention, Universal Understanding, Problem Solving, Types of communication Verbal and Non verbal, Barriers of Communication.				
Unit II	**Understanding Visual Communication: SMCR Model Theoretical concepts and constructs in Communication models, Lasswell‟s Model, Two-step flow theory, Schramm‟s Circular Model, Whites Gatekeeper theory, Dance‟s Helical model, Levels of Communication: Technical, Semantic, and Pragmatic, Enhanced Communication Skills**				
Unit III	Introduction to semiotics: Analysis, aspects of signs and symbols denotations and connotations - paradigmatic and syntagmatic aspects of signs. The semiotic landscape: Language and Visual communication - Narrative representation. Principles of Visual - Sensory Perceptions - Color psychology and theory (some aspects) – Definition - Optical/Visual Illusions etc., Design process – Research - A source of concept - The process of developing ideas, verbal, visual, combination & thematic - Visual thinking - Associative techniques, materials, tools (precision instruments etc.) - **Design execution and presentation. Case Studies in communications skills, Ideation and Creative Thinking Lateral Thinking. Designing Messages for different audiences.**				
Unit IV	**Communication and Public opinion: Understanding Public Opinion Formation, Understanding Communication Theories, Strategic Communication, Global Perspective, Influence on Policy, Media Ethics, Cross-cultural communication.**				
Unit V	Mass Media communication: Understanding Media Systems, Media Effects, Media and Democracy, Media and Advertising, Media and Culture, Media Management and Business, Theories of mass media Hypodermic needle model, uses and a gratification model.				

Reference and Text Books:

Barnes, S. B. (2011). An introduction to visual communication. New York.
Worth, S. (2016). Studying visual communication. University of Pennsylvania Press.
Johansen, J. D., & Larsen, S. E. (2005). Signs in use: an introduction to semiotics. Routledge.
Glynn, C. J. (1987). The communication of public opinion. Journalism Quarterly, 64(4), 688-697.
Shabir, G., Safdar, G., Jamil, T., & Bano, S. (2015). Mass Media, Communication and Globalization with the perspective of 21st century. New Media and Mass Communication, 34, 11-15

Online Resources

Online Resources

https://www.onlineclothingstudy.com/2017/05/production-planning-control-in-apparel.html
https://www.amazon.in/Apparel-Manufacturing-Technology-T-Karthik-ebook/dp/B08NTT7ZG8
https://www.youtube.com/watch?v=BRk5WDWCyYM
https://www.onlineclothingstudy.com/2021/09/managing-apparel-production-using.html

Course Outcomes		**Knowledge level**
CO-1	Convey information and messages effectively, engage the audience, and enhance understanding through the use of visual elements and design principles	**K1**
CO-2	It allows us to gain insight into how visual elements and design principles are used to convey information, ideas, and messages effectively.	**K3&K6**
CO-3	Studying semiotics is to develop a deeper understanding of how signs and symbols operate in various aspects of life, from language to culture to communication, and to apply this understanding in diverse contexts, including academia, communication, culture, and creativity.	**K4**
CO-4	Studying communication and public opinion encompass a range of goals related to understanding, analyzing, and influencing how communication shapes public sentiment and attitudes	**K5**
CO-5	Allows students to connect deeply with mass media communication in gaining an understanding of the media landscape, its effects on society, and the practical skills needed for careers in media and communication fields.	**K2,K6**

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S(3)	M(2)	L(1)	S(3)	S(3)	M(2)	L(1)	S(3)	L(1)	L(1)
CO2	S(3)	M(2)	L(1)	S(3)	S(3)	M(2)	L(1)	S(3)	L(1)	L(1)
CO3	S(3)	S(3)	L(1)	S(3)	S(3)	S(3)	M(2)	S(3)	L(1)	M(2)
CO4	L(1)	L(1)	L(1)	S(3)	L(1)	L(1)	L(1)	S(3)	L(1)	S(3)
CO5	M(2)	L(1)	M(2)	M(2)	M(2)	M(2)	S(3)	S(3)	S(3)	S(3)
W.AV	2.4	1.8	1.2	2.8	2.4	2	1.6	3	1.4	2

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S(3)	S(3)	M(2)	S(3)	S(3)
CO2	S(3)	S(3)	M(2)	S(3)	S(3)
CO3	S(3)	S(3)	S(3)	S(3)	S(3)
CO4	M(2)	M(2)	M(2)	S(3)	M(2)
CO5	M(2)	M(2)	M(2)	S(3)	M(2)
W.AV	2.6	2.6	2.2	3	2.6

S–Strong (3), M-Medium (2), L-Low (1)

I – Semester-Allied					
Core	**Course code: 82816**	**Art Visualization- Practical**	**p**	**Credits: 2**	**Hours: 3**
Course Objectives	1. Develop the ability to create the illusion of depth in 2D drawings using various techniques. 2. Understand and apply the principles of 2-point perspective in drawings 3. Extend perspective skills by mastering 3-point perspective. 4. Apply knowledge of facial anatomy and proportions to draw the human face accurately 5. Practice mixing the three primary colors and understand color theory.				
Unit I	**Transforming 2D to 3D Sketches:** Line drawing for depth, Hatching and cross-hatching, Shading techniques. ,Stippling and pointillism, Adding texture and dimension to objects, Creating depth in landscapes, Portraying depth in still life, Transforming flat characters into 3D figures, Emphasizing depth in abstract art, Three-dimensional effects in typography				
Unit II	**Perspective Drawing - 2 Point Perspective**: Horizon line and vanishing points, Drawing architectural elements, Conveying depth and scale, Objects in perspective, Complex interior and exterior scenes, Using 2-point perspective in character art, Creating urban landscapes. Surrealism and 2-point perspective, 2-point perspective in comics and graphic novels, Animation and 2-point perspective				
Unit III	**Perspective Drawing - 3 Point Perspective:** Introduction to 3-point perspective, Drawing objects in dramatic angles, Overhead and worm's-eye view, Advanced architectural perspectives, Incorporating 3-point perspective in fantasy art, Perspective challenges in science fiction art, Perspective and surrealistic art, Dynamic perspectives in animation, 3-point perspective in concept art, Realism and 3-point perspective				
Unit IV	**Facial Anatomy and Portraiture:** Facial anatomy and landmarks, Proportions of the face, Contour line drawing, Exploring different styles in portrait art. Self-portraiture and expression, Portraying emotion and character in faces, Caricature and exaggeration. Historical and cultural influences on portrait art, Portrait composition and backgrounds, Mixed media, and portrait art				
Unit V	**Exploring Color Theory:** Color wheel creation, Mixing primary colors, Color harmony and contrast, Color temperature and psychology, Painting techniques and effects				

Reference and Text Books:

Nicolaides, K. (1941). The Natural Way to Draw.
Gurney, J. (2009). Imaginative Realism: How to Paint What Doesn't Exist.
Gurney, J. (2010). Color and Light: A Guide for the Realist Painter.
Edwards, B. (1979). Drawing on the Right Side of the Brain

Online Resources

https://www.amazon.in/Drawing-Right-Brain-Betty-Edwards/dp/1585429201
https://www.amazon.in/Color-Light-Realist-Painter-Gurney/dp/0740797719
https://www.amazon.in/Natural-Way-Draw-Working-Study/dp/0285638386

Course Outcomes		Knowledge level
CO-1	Able to develop flat 2D images into lifelike 3D sketches	K3
CO-2	Able to create scenes and objects with accurate 2-point perspective	K5
CO-3	Able to create scenes and objects with accurate 3-point perspective	K5
CO-4	Will be proficient in drawing faces with accurate proportions and in various artistic styles.	K3,K4
Co-5	Able to demonstrate a solid understanding of color theory and the ability to mix and apply colors effectively.	K2,K3

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S(3)	S(3)	M(2)	L(1)	S(3)	M(2)	M(2)	M(2)	L(1)	L(1)
CO2	S(3)	S(3)	S(3)	L(1)	S(3)	M(2)	M(2)	M(2)	L(1)	L(1)
CO3	S(3)	S(3)	S(3)	L(1)	S(3)	M(2)	M(2)	M(2)	L(1)	L(1)
CO4	S(3)	S(3)	S(3)	L(1)	M(2)	L(1)	M(2)	S(3)	L(1)	L(1)
CO5	S(3)	S(3)	S(3)	L(1)	S(3)	M(2)	M(2)	M(2)	L(1)	L(1)
W.AV	3	3	2.8	1	2.6	1.8	2	2.2	1	1

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S(3)	S(3)	S(3)	M(2)	S(3)
CO2	S(3)	S(3)	S(3)	M(2)	S(3)
CO3	S(3)	S(3)	S(3)	M(2)	S(3)
CO4	S(3)	S(3)	S(3)	M(2)	S(3)
CO5	S(3)	S(3)	S(3)	M(2)	S(3)
W.AV	3	3	3	2	3

S–Strong (3), M-Medium (2), L-Low (1)

II – Semester-Core Course					
Core	**Course code: 82823**	**Design Study**	**T**	**Credits: 4**	**Hours: 4**
Course Objectives	**1. To equip individuals with the knowledge, skills, and creative mindset necessary to excel in design-related professions** **2. These concepts are essential for creating aesthetically pleasing, communicative, and effective compositions.** **3. It involves understanding how colors interact, how they can convey meaning, and how to use them effectively in visual compositions.** **4. The objectives of studying typography are to develop a deep understanding of the art and science of type design and layout.** **5. These principles are essential for producing engaging and functional designs across various design disciplines.**				
Unit I	Design fundamentals:- Understanding Design Principles, Significance and purpose of design in human life, Characteristics of a design and designers mind, Target audience, creative vs stereo type solutions, Experimental approach during design challenge				
Unit II	Elements and Principles of Design: - Creative Expression, Contextual Application, Pattern and Repetition, Proportion and Scale, Lines, Shapes.				
Unit III	Color theory :- Understanding the Color Wheel, Color Mixing, Color Properties, Color Harmonies, Color Temperature, Color Psychology, Digital Color Theory, Practical Application.				
Unit IV	Typography: – Typeface anatomy , measurements, typeface classifications, type families, spacing and alignment, selecting appropriate fonts, Expressive Typography, Typography Anatomy, Typography History, Grid Systems. Graphics:– importance of graphics, types of graphics, vector graphics , raster graphics, image manipulation, format conversion, crop and scale, color manipulation.				
Unit V	Grids and layouts:- Grid Anatomy, Role of grids, grid system and templates, important parts of a page layout, capturing readers attention , stages of design process, Incorporating the golden mean into your designs, Grid Consistency.				

Reference and Text Books:

Nicolaides, K. (1941). The Natural Way to Draw.
Gurney, J. (2009). Imaginative Realism: How to Paint What Doesn't Exist.
Gurney, J. (2010). Color and Light: A Guide for the Realist Painter.
Edwards, B. (1979). Drawing on the Right Side of the Brain

Web Resources

https://www.amazon.in/Drawing-Right-Brain-Betty-Edwards/dp/1585429201
https://www.amazon.in/Color-Light-Realist-Painter-Gurney/dp/0740797719
https://www.amazon.in/Natural-Way-Draw-Working-Study/dp/0285638386

Course Outcome

CO1	**To provide a solid foundation in the principles and elements of design, enabling individuals to create aesthetically pleasing, functional, and effective visual compositions.**	**K1**
CO2	**To provide a comprehensive understanding of the fundamental building blocks and guidelines that underpin all forms of visual art and design.**	**K3,K6**
CO3	**Evaluate the develop a strong foundation in color theory, enabling you to use color purposefully and effectively in your creative endeavors and visual communication**	**K4**
CO4	**Provides art and technique of arranging type to make written language legible, readable, and visually appealing.**	**K5**
CO5	**To develop a deep understanding of how grid systems and layout principles are used to organize and structure visual content in an effective and aesthetically pleasing manner**	**K2,K6**

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S(3)	M(2)	M(2)	M(2)	S(3)	S(3)	M(2)	S(3)	L(1)	L(1)
CO2	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	L(1)	L(1)
CO3	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	L(1)	L(1)
CO4	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	L(1)	L(1)
CO5	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	L(1)	L(1)
W.AV	**3**	**2**	**2.8**	**2**	**3**	**3**	**2**	**3**	**1**	**1**

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S(3)	S(3)	S(3)	M(2)	S(3)
CO2	S(3)	S(3)	S(3)	M(2)	S(3)
CO3	S(3)	S(3)	S(3)	M(2)	S(3)
CO4	S(3)	S(3)	S(3)	M(2)	M(2)
CO5	S(3)	S(3)	S(3)	M(2)	M(2)
W.AV	**3**	**3**	**3**	**2**	**2.6**

S–Strong (3), M-Medium (2), L-Low (1)

II – Semester-Core Course					
Core	**Course code: 82824**	**Game Design - Practical**	**P**	**Credits: 4**	**Hours: 5**

Objectives

1. **To equip students with the knowledge and practical skills needed to effectively utilize color theory, psychology, and aesthetics in game design, enhancing gameplay experiences and engagement.**
2. **To understand user interface (UI) design principles and the practical skills to redesign and improve UIs for a variety of game genres.**
3. **To teach the art of creating compelling and visually striking posters for video games across different genres**
4. **To understand the role of game logos in establishing brand identity and recognition.**
5. **Understand the principles and elements of game design for physical board games.**

1. Art direction, character design, and environment design with attention to color psychology Puzzles, challenges, and interactions that involve color mixing, matching, and perception Gathering and analyzing player feedback on color-related gameplay elements.
2. Font selection, readability, visual hierarchy, and grid systems. Icon design, button aesthetics, and maintaining a cohesive visual style. Mobile UI design principles, platform-specific considerations, and responsive design.
3. Poster design fundamentals, genre considerations, and the role of posters in game promotion Poster layout, typography, imagery, and thematic representation.Concept sketching, narrative representation, and creating a visual story.
4. Logo design software basics, vector graphics, and logo vectorization. Color psychology, brand color schemes, and color considerations for game logos. Logo usage guidelines, branding mockups, and logo adaptation.
5. Prototyping tools, materials, and playtesting. Component design, card layout, and creating thematic artwork. Rulebook design, instructional design, and clarity in rule explanations.

Outcome

1. **Able to develop an immersive game experience that harnesses the power of color schemes, perception, and psychology to engage players on both visual and emotional levels.**
2. **Able to develop ,analyze, redesign, and create effective UIs that enhance player experience and usability across various game genres**
3. **Able to understand and develop visually captivating game posters that effectively convey the essence of a game, promoting player engagement and enhancing marketing efforts in the game industry.**
4. **Able to evaluate distinctive and memorable game logos that effectively represent the game's identity.**
5. **Able to conceive, design, prototype, and produce physical board games and tabletop games, preparing them to create engaging and entertaining experiences for players in the tabletop gaming industry.**

Reference and Text Books:

1. Rubin, S., & Ferland, J. (2019). Practical User Interface Design for Games and 3D Applications. CRC Press.
2. Tondreau, B. (2017). Game User Experience Evaluation. CRC Press.
3. Norman, R. (2014). Tabletop: Analog Game Design. ETC Press.

Web Resources

https://press.etc.cmu.edu/books/tabletop
https://www.amazon.com/Game-Experience-Evaluation-Human-Computer-Interaction/dp/331915984

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S(3)	S(3)	M(2)	L(1)	M(2)	M(2)	M(2)	L(1)	L(1)	M(2)
CO2	S(3)	S(3)	S(3)	L(1)	S(3)	S(3)	S(3)	L(1)	L(1)	M(2)
CO3	S(3)	S(3)	S(3)	L(1)	S(3)	S(3)	S(3)	M(2)	L(1)	M(2)
CO4	S(3)	S(3)	S(3)	L(1)	S(3)	S(3)	S(3)	M(2)	L(1)	M(2)
CO5	S(3)	S(3)	S(3)	L(1)	S(3)	S(3)	S(3)	M(2)	L(1)	M(2)
W.AV	**3**	**3**	**2.8**	**1**	**2.8**	**2.8**	**2.8**	**1.6**	**1**	**2**

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S(3)	S(3)	S(3)	L(1)	M(2)
CO2	S(3)	S(3)	S(3)	M(2)	S(3)
CO3	S(3)	S(3)	S(3)	L(1)	S(3)
CO4	S(3)	S(3)	S(3)	L(1)	S(3)
CO5	S(3)	S(3)	S(3)	L(1)	S(3)
W.AV	**3**	**3**	**3**	**1.2**	**2.8**

S–Strong (3), M-Medium (2), L-Low (1)

II – Semester-Allied					
Allied	**Course code: 82825**	**Critical Studies for Games**	**T**	**Credits: 3**	**Hours: 3**
Course Objectives	**1. Explore the different genres of games and consoles and understand the origins and evolution of the medium.** **2. To inculcate knowledge about various significant aspects and developments in the world of video games, spanning from the 1990s to different regions and genres** **3. To educate students about video game production , ethics, morals** **4. Discuss about Game market & Business behind publishing games.** **5. To demonstrate and understand the technical and abstract skills needed to practice as a game designer**				
Unit I	Video game, Imaging Technologies, Modes of Exhibition, Influence and Precursors, The study of video games, Main frame games and simulation ,Arcade Games, Early video game systems ,Atari, Vector games, The rise of the home computer, Electronic Arts,The video game Industry Crash, Nintendo, A new generation of home video game systems, CD-Rom Games, Interactive movies				
Unit II	Arcade Games of the 1990s and Beyond, Handheld video game systems, Shareware Games,The later Generation systems, Online Role-Playing Games, Sony PlayStation, Lara Croft, First-Person Shooting Games, Independent and Experimental Video Games, Video Games in Europe, Video Games in Asia, Video Games in Australia.				
Unit III	The Video Game Development Process, Graphics in Video Games, Sound in Video Games, Video Game Genres, Best-Selling Video Games, The Video Game as an Object of Controversy, Video Games Rating Systems, Morals, Ethics, and Video Games, Video Games and Their Relationship with Other Media, The Future of Video Games PAC-MAN,ZORK ,Flight Simulator, Castle Wolfenstein, Super Mariobros, Tetris, Simcity, Alone in the dark, Myst,Doom, The Sims, Grand Theft Auto				
Unit IV	Game market, Impact of games on players, Understanding tabletop game industry, Pros and cons of game impacts, End user experience, designer being accountable, hidden agenda, The business of game publishing, Selling Ideas to the industry, Target audience, Games for girls and women's				
Unit V	Intellectual Property-Types of IP -Purpose of IP -Working with an IP -Research -Know Your Constraints -Honor the Player -The Core of the Game Versus the Core of the IP-Creating Sequels Types of Sequels-Targeting a Market-Abilities of the Target Market-Focus Groups-The Mass Market.				

Reference and Text Books:

1. During, S. (1993). The Cultural Studies Reader. Routledge.
2. Loguidice, B., & Barton, M. D. (2009). Vintage Games: An Insider Look at the History of the Most Influential Games of All Time. Focal.
3. Wolf, M. J. P. (2008). Video Game Explosion: A History from Pong to Playstation. Greenwood.
4. Schell, J. (2008). The Art of Game Design: A Book of Lenses. Morgan Kaufmann.

Web Resources

https://www.routledge.com/The-Cultural-Studies-Reader/During/p/book/9780415374132
https://www.amazon.com/Art-Game-Design-Book-Lenses/dp/0123694965
https://www.amazon.com/Vintage-Games-Insider-History-Influential/dp/0240811461

Course Outcome

CO1	**Acquire a well-rounded knowledge of the gaming industry, enabling them to make informed decisions, contribute creatively, and engage effectively within the field of game development and design.**	**K1,K2,K4**
CO2	**Able to understand and Analyze the various facets, trends, and developments within the video game industry, spanning different genres, platforms, regions, and eras. government policies.**	**K3,K6**
CO3	**Explore and understand the game development pipeline by analyzing existing games**	**K1,K2**
CO4	**Evaluate the impact of game players and determine the target audience for selected Game**	**K4,K5**
CO5	**Develop content in accordance to IP**	**K3**

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M(2)	S(3)	M(2)	L(1)	S(3)	S(3)	S(3)	S(3)	M(2)	M(2)
CO2	M(2)	S(3)	M(2)	L(1)	S(3)	S(3)	S(3)	S(3)	M(2)	M(2)
CO3	M(2)	S(3)	M(2)	M(2)	S(3)	S(3)	S(3)	S(3)	M(2)	M(2)
CO4	M(2)	S(3)	M(2)	M(2)	S(3)	S(3)	S(3)	S(3)	M(2)	M(2)
CO5	M(2)	S(3)	S(3)	S(3)	S(3)	S(3)	S(3)	S(3)	S(3)	M(2)
W.AV	2	3	2.8	1.8	3	3	3	3	2.4	2

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M(2)	M(2)	M(2)	M(2)	M(2)
CO2	M(2)	S(3)	S(3)	M(2)	M(2)
CO3	M(2)	S(3)	S(3)	M(2)	M(2)
CO4	M(2)	M(2)	M(2)	S(3)	M(2)
CO5	S(3)	S(3)	S(3)	S(3)	S(3)
W.AV	2.2	2.6	2.6	2.4	2.2

S–Strong (3), M-Medium (2), L-Low (1)

II – Semester-Allied					
Allied	**Course code: 82826**	**Critical Studies for Games - Practical**	**P**	**Credits:3**	**Hours: 3**

Objectives	**1. To provide the analytical skills needed to critically deconstruct and examine various aspects of video games** **2. To provide an in-depth understanding of the history, evolution, and design principles of video game consoles** **3. To develop the knowledge and skills to conceptualize, design, and develop hybrid games that blend elements from multiple genres.** **4. Gain insight into the gaming preferences, motivations, and challenges of female gamers** **5. Gain knowledge on how to create comprehensive game design documents and effective pitch presentations.**

1. Definition of video game deconstruction, its role in game analysis, and its applications in game design. Game mechanics, player actions, level design, and game balance.
2. Brief overview of video game console evolution, the role of consoles in gaming history, and key design concepts. Pioneering consoles (e.g., Magnavox Odyssey, Atari 2600), hardware limitations, and early game design considerations., Consoles like the Super Nintendo, Sega Genesis, PlayStation, and Nintendo 64, advancements in graphics and sound, and game library diversity.
3. Play testing methodologies, player engagement, and iterative design. Game development tools, project management, and presenting the hybrid game prototype
4. Gender diversity in gaming, genre preferences, and the female gaming community. Casual game play mechanics, cooperative game play, and accessibility features. Storytelling for diverse characters, character development, and addressing gender stereotypes.
5. Overview of game design documentation, purpose of pitches, and industry expectations. Brainstorming techniques, concept ideation, and theme selection. Art direction, character design, environment design, and concept art. Play testing methodologies, user feedback analysis, and iterative design.

Outcome	**1. Evaluate and analyze video game mechanics, aesthetics, narrative, and player experience, enabling them to critically analyze and create engaging and well-designed games.** **2. Research and analysis, the technological advancements, design choices, and industry trends that have shaped the development of game consoles over time.** **3. To conceptualize, design, and develop innovative hybrid games** **4. To Develop inclusive games that resonate with a diverse audience** **5. To Develop and explain game design documents and pitch of a game concepts effectively**

Reference and Text Books:

1. Schell, J. (2008). The Art of Game Design: A Book of Lenses. Morgan Kaufmann.
2. Kent, S. L. (2019). The Ultimate History of Video Games: Volume Two. Three Rivers Press.
3. Adams, E., & Rollings, A. (2014). Fundamentals of Game Design. Pearson Education.
4. Clark, T. H. (2017). Game Design: How to Create Video and Tabletop Games, Start to Finish. Watson-Guptill.
5. Salen, K., & Zimmerman, E. (2003). Rules of Play: Game Design Fundamentals. The MIT Press.

Web Resources

https://www.amazon.com/Art-Game-Design-Book-Lenses/dp/0123694965
https://www.amazon.in/Ultimate-History-Video-Games-Billion-Dollar-ebook/dp/B08QF6XSZV
https://www.amazon.in/Game-Design-Create-Tabletop-Finish/dp/0786469528

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)	M(2)	M(2)	M(2)
CO2	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)	M(2)	M(2)	M(2)
CO3	S(3)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)	M(2)	M(2)	M(2)
CO4	S(3)	S(3)	S(3)	M(2)	M(2)	S(3)	S(3)	S(3)	M(2)	M(2)
CO5	M(2)	S(3)	S(3)	M(2)	S(3)	M(2)	M(2)	M(2)	M(2)	M(2)
W.AV	**2.4**	**3**	**3**	**2**	**2.8**	**2.8**	**2.2**	**2.2**	**2**	**2**

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M(2)	S(3)	S(3)	M(2)	M(2)
CO2	M(2)	S(3)	S(3)	M(2)	M(2)
CO3	S(3)	S(3)	S(3)	M(2)	S(3)
CO4	S(3)	S(3)	S(3)	M(2)	S(3)
CO5	S(3)	S(3)	S(3)	M(2)	S(3)
W.AV	**2.6**	**3**	**3**	**2**	**2.6**

S–Strong (3), M-Medium (2), L-Low (1)

III – Semester-Core Course					
Core	**Course code: 82833**	**Game Production**	**T**	**Credits: 3**	**Hours: 3**
Course Objectives	**1. To acquire the knowledge and skills to effectively pitch their ideas and secure positions within the game industry.** **2. Prepare students for effective teamwork and communication within the game development industry.** **3. To understand the fundamental aspects of game design, focusing on constraints, puzzle creation, level design, and the artful integration of puzzles into gameplay, fostering their ability to contribute effectively to game development teams.** **4. To grasp the essentials of interactive storytelling, engaging narratives for games, understanding story structures, and exploring various storytelling approaches and their impact on player experiences** **5. To Acquire knowledge and skills needed to create compelling art for various game types and understand the game development process**				
Unit I	Selling yourself and Your Ideas to the Game Industry-Getting a Job at a Publisher or Developer - Pitching Your Original Ideas -Selling Ideas to the Game Industry-Role Definition for Game Designers-Game development career choices				
Unit II	Working as a Game Designer -Team Structure -Developers Team -Applying for a job in Game Design -Publishers Team -Team Profile -All Contributions to the Design -Team Building -Team Communication -Designer Perspective				
Unit III	The Core of a Game-Constraints on Game Design-Puzzle Design -Basic Puzzle Characteristics - Puzzle Types-Riddles -Lateral Thinking-Spatial Reasoning -Pattern Recognition -Logic - Exploration -Item Use -Level Design and Puzzle Design				
Unit IV	Interactive story telling-Story – three-act play – Story in interactive forms – decision trees and parallel stories – Segmenting stories as levels – Stories with exposition and metaphors – depth of a story – fun in storytelling- Story impact – Moral and immoral – inspiration and casual interactivity – emergent -Types of stories-traditional stories, personal experience stories, created stories				
Unit V	Special types of games-Games as Art-Games as a Teaching Tool-Serious Games-Casual Games- Social Games-Game production- Scheduling- Communicating- Cycling-Team Keeping- Alpha,beta gold milestones -Marketing,packaging & releasing-Planning for organic hits				

Reference and Text Books:

1. Fullerton, T. (2014). *Game design workshop: A play-centric approach*.
2. Schell, J. (2014). *The art of game design: A book of lenses* (2nd ed.). A K Peters.
3. Ganesh, S. (2007). *Handbook of media communication and public relations*. Radha Publication.
4. Friedmann, A. (2014). *Writing for visual media*. Focal Press.
5. Brinkmann, R. (2008). *The art and science of digital compositing*. Morgan Kaufmann.
6. Kelly, D. (2000). *Digital compositing in depth*. Coriolis Group.
7. Zimmerman, E., & Salen, K. (2003). *Rules of play: Game design fundamentals*. MIT Press.
8. Romero, B., & Schreiber, I. (2009). *Challenges for game designers*.

Web Resources

https://www.amazon.in/Art-Game-Design-Lenses-Second/dp/1466598646
https://www.amazon.in/Game-Design-Workshop-Playcentric-Innovative/dp/0240809742
https://www.amazon.in/Challenges-Game-Designers-Brenda-Brathwaite/dp/158450580X

Course Outcome		
CO1	**Demonstrate and understand the work of a game designer in industry**	**K1, K2,K3**
CO2	**Able to work in collaborative game design roles, contributing effectively to development teams through strong communication and teamwork.**	**K4, K5**
CO3	**Able to Understand how game can be used as a tool to create awareness.**	**K2**
CO4	**Able to explore and create contents that are suitable for gamification.**	**K1,K6**
CO5	**Will be proficient in producing game art assets, collaborating in game production teams, and grasping the industry dynamics necessary for successful game development.**	**K1, K3,K6**

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	L(1)	M(2)	S(3)	S(3)	S(3)	S(3)	M(2)	S(3)	S(3)	S(3)
CO2	M(2)	M(2)	M(2)	S(3)	S(3)	M(2)	M(2)	M(2)	S(3)	S(3)
CO3	S(3)	S(3)	S(3)	L(1)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)
CO4	S(3)	S(3)	S(3)	S(3)	S(3)	S(3)	S(3)	M(2)	M(2)	S(3)
CO5	S(3)	S(3)	S(3)	S(3)	S(3)	S(3)	S(3)	M(2)	M(2)	S(3)
W.AV	2.4	2.6	2.8	2.6	3	2.6	2.6	2.4	2.4	3

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S(3)	S(3)	S(3)	S(3)	S(3)
CO2	S(3)	S(3)	S(3)	S(3)	S(3)
CO3	S(3)	S(3)	S(3)	S(3)	S(3)
CO4	S(3)	S(3)	S(3)	S(3)	S(3)
CO5	M(2)	S(3)	S(3)	S(3)	S(3)
W.AV	2.8	3	3	3	3

S–Strong (3), M-Medium (2), L-Low (1)

III – Semester-Core Course					
Core	**Course code: 82834**	**Design & Communication for Game Design**	**T**	**Credits: 3**	**Hours :3**
Course Objectives	**1. To understand the use and creation of 2D game objects, sprites with the help of game engines** **2. To understand the use and creation of GUI , HUD and other UI systems used with the help of game engines** **3. To equip the essential skills and knowledge for creating engaging and immersive games.** **4. Enable game students to understand the significance of prototyping, utilize game engines effectively, and design essential game elements for the development of functional and engaging game prototypes.** **5. To acquire the skills needed to master sound design, optimize game assets, and prepare games for publication.**				
Unit I	2d games and 2d art, - Creation of 2D game objects, Importing and Working with 2D GameObjects , Understanding sprite editor, Importing 2D game assets				
Unit II	GUI – In-Game interface screen – designing the GUI – HUD-Information presentation – Screen location for information – Menus – Game Controls – Defining controls interactivity – Non Traditional controls – Problems with controls				
Unit III	2D character,The Art form – Form and Shape - Anatomy and Proportions – Perspective - Breaking Down Color - Lighting and Shading - Persistence of vision – Thaumatrope - Principles of animation – Appeal and Dynamics – acting, emotions and expression .Particle system – uses of particle system – Understanding particle system				
Unit IV	Prototyping – importance of prototyping – Using game engines for prototyping - Designing – sprites –backgrounds -event- and actions – tiles – spaces – sound - Mechanics and triggers – rooms – score				
Unit V	Sounds - listeners and reverb zones, Sound scripting, Building settings- Profiling, Optimizing, Publishing Assets References				

Reference and Text Books:

1. Watkins, A. (2011). *Creating Games with Unity and Maya*. Focal Press.
2. Habgood, J., & Overmars, M. (2006). *The Game Maker's Apprentice*. Apress.
3. Zimmerman, E., & Salen, K. (2003). *Rules of Play: Game Design Fundamentals*. MIT Press.
4. Romero, B., & Schreiber, I. (2009). *Challenges for Game Designers*.
5. Fullerton, T. (2014). *Game Design Workshop: A Play-Centric Approach*.
6. Crusie, J. (2012). *Adobe Photoshop CS6 Digital Classroom*. Willey.

Web Resources

https://www.amazon.in/Game-Makers-Apprentice-Development-Technology/dp/1590596153
https://www.sciencedirect.com/book/9780240818818/creating-games-with-unity-and-maya

Course Outcome

CO1	**Enhances skills for conceptualizing and creating 2D objects using production techniques**	**K2**
CO2	**Able to demonstrate professional quality UI layout design and UI design.**	**K2,K3**
CO3	**Able to create engaging games that captivate players and offer immersive experiences.**	**K1,K6**
CO4	**Understanding and producing a fully functioning 2D games**	**K1.K2**
CO5	**Will be able to develop sound design, asset optimization, and game publication.**	**K1,K3**

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S(3)	S(3)	M(2)	S(3)	S(3)	S(3)	S(3)	M(2)	S(3)	S(3)
CO2	S(3)	S(3)	S(3)	S(3)	S(3)	S(3)	S(3)	M(2)	M(2)	M(2)
CO3	S(3)	S(3)	M(2)	S(3)	S(3)	S(3)	S(3)	M(2)	S(3)	S(3)
CO4	M(2)	M(2)	S(3)	S(3)	S(3)	S(3)	S(3)	M(2)	S(3)	M(2)
CO5	M(2)	M(2)	S(3)	S(3)	S(3)	S(3)	S(3)	M(2)	S(3)	S(3)
W.AV	2.6	2.6	2.6	3	3	3	3	2	2.8	2.6

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S(3)	S(3)	S(3)	L(1)	M(2)
CO2	S(3)	S(3)	S(3)	M(2)	M(2)
CO3	S(3)	S(3)	M(2)	M(2)	S(3)
CO4	M(2)	S(3)	M(2)	M(2)	S(3)
CO5	S(3)	S(3)	S(3)	M(2)	S(3)
W.AV	2.8	3	2.6	1.8	2.6

S–Strong (3), M-Medium (2), L-Low (1)

III-Semester- Core Course					
Core	**Course Code: 82835**	**Design & Communication for Game Design - Practical**	**P**	**Credits: 3**	**Hours:3**
Objective	**1. Developing the ability to create diverse and captivating characters for games.** **2. Explore various art styles and their impact on game assets.** **3. Master the creation of sprite sheets for character animations.** **4. Learn to design user interfaces for games.** **5. Apply game design principles to create functional prototypes**				
1. Conceptualizing character traits, backstories, and appearances.Sketching and ideation.3D modeling or 2D character design based on concept Analyzing an existing game's art style., 2. Modifying assets while maintaining gameplay compatibility. Applying new visual styles to characters, objects, or environments Analyzing an existing game's art style., 3. .Principles of UI/UX design. Creating game menus and level selection screens. Implementing interactive buttons and elements Using game engines or development tools for prototyping. 4. Playtesting, gathering feedback, and iterating on game designs.Developing a playable game prototype based on a prompt					
Outcome	**1. Able to produce three distinct character designs, each with unique traits and aesthetics.** **2. Able to redesign major assets of an existing game, transforming its visual style while retaining functionality.** **3. Able to produce sprite sheets for character walk and run cycles.** **4. Develop and design menu screens and level chooser windows for a game.** **5. Able to develop a game prototype based on a provided prompt, showcasing both design aesthetics and gameplay mechanics.**				

Reference and Text Books:

1. Watkins, A. (2011). *Creating Games with Unity and Maya*. Focal Press.
2. Habgood, J., & Overmars, M. (2006). *The Game Maker's Apprentice*. Apress.
3. Zimmerman, E., & Salen, K. (2003). *Rules of Play: Game Design Fundamentals*. MIT Press.
4. Romero, B., & Schreiber, I. (2009). *Challenges for Game Designers*.
5. Fullerton, T. (2014). *Game Design Workshop: A Play-Centric Approach*.
6. Crusie, J. (2012). *Adobe Photoshop CS6 Digital Classroom*. Willey.

Web Resources

https://www.amazon.in/Game-Makers-Apprentice-Development-Technology/dp/1590596153
https://www.sciencedirect.com/book/9780240818818/creating-games-with-unity-and-maya

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S(3)	S(3)	S(3)	M(2)	M(2)	M(2)	M(2)	M(2)	M(2)	M(2)
CO2	S(3)	S(3)	S(3)	M(2)	S(3)	M(2)	M(2)	L(1)	L(1)	L(1)
CO3	S(3)	S(3)	S(3)	L(1)	M(2)	S(3)	M(2)	L(1)	L(1)	L(1)
CO4	S(3)	S(3)	S(3)	M(2)	M(2)	M(2)	M(2)	M(2)	M(2)	M(2)
CO5	S(3)	S(3)	S(3)	M(2)	M(2)	M(2)	M(2)	M(2)	M(2)	M(2)
W.AV	3	3	3	1.8	2.2	2.2	2	1.6	1.6	1.6

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S(3)	S(3)	S(3)	M(2)	S(3)
CO2	S(3)	S(3)	S(3)	M(2)	S(3)
CO3	S(3)	S(3)	S(3)	M(2)	S(3)
CO4	S(3)	S(3)	S(3)	M(2)	S(3)
CO5	S(3)	S(3)	S(3)	M(2)	S(3)
W.AV	3	3	3	2	3

S–Strong (3), M-Medium (2), L-Low (1)

III – Semester-Allied Course					
Allied	**Course code: 82836**	**3D Digital Art For Games**	**T**	**Credits: 3**	**Hours: 3**
Course Objectives	1. **Explore the tools, techniques, procedures and presentation skills necessary to produce professional 3D objects as per the requirement.** 2. **Enhancing skills in conceptualization, layout and production techniques** 3. **Equip essential skills in vehicle creation for games, covering modeling basics, topology, UV mapping, texturing, and material assignment.** 4. **To develop expertise in texture creation and shader development for game design.** 5. **To acquire essential 3D GameWorld design skills using game engines.**				
Unit I	Maya Modeling – Introduction to predictive modeling, Stages of modeling- Blocking, Shaping and Detailing, Modeling animation versus game objects, understanding techniques to achieve complex shapes, Uniform span flow importance, Using Automated tools for faster results, Sculpt geometry, Deformers, view port optimization				
Unit II	Game environment modeling:polygon modeling – prop modeling - What is game art - what are the core modeling techniques used in games - Theories of LOD - Kit bashing - static meshes and animated meshes - Modeling low poly props with high poly details using transfer maps and bake maps – understanding normal's and one sided objects				
Unit III	Vehicle creation for games,Vehicle modeling basics – proportion and layout –topology – body mesh – assigning basic color maps – baking detail to low poly-unwrapping –texturing and material				
Unit IV	Texture- Unwrapping techniques, UV layout optimization, Handmade texture effects, Image based texture, Texture pipeline, Shader development in Hypershade, Generating essential maps,Diffuse map, Bump map, Speculator map, Introduction to PBR.				
Unit V	3D GameWorld Design-3d and game engine theories Introduction to 3D -2d vs 3d-Introduction to game engine –interface –project panel –hierarchy project –inspector panel –terrain – tool, sculpt brush, set height, paint textures, place details, settings –understanding size and scale – proportion –importing exporting assets –sky box				

Reference and Text Books:

1. Lanier, L. (2006). *Advanced Maya Texturing and Lighting*. Wiley Publishing, Inc.
2. Spadaro, J., & Kim, D. (2005). *Maya Bible*. Wiley Publishing Inc.
3. Palamar, T. (2010). *Mastering Autodesk Maya 2016*. Sybex.
4. Caplin, S. (2008). *Art & Design in Photoshop*. Elsevier Ltd.
5. Miller, E. (2009). *Autodesk Maya Techniques*. Autodesk, Inc.

Web Resources

https://www.amazon.in/Maya%C2%AE-Hyper-Realistic-Creature-Creation-hands/dp/1897177488
https://www.amazon.in/Advanced-Maya-Texturing-Lighting-Lanier-ebook/dp/B00VYNMYUQ

Course Outcome

CO1	**Graduates will excel in Maya modeling, enabling them to create complex game assets efficiently and optimize viewport performance, enhancing their contributions to game development.**	**K1,K3, K6**
CO2	**Enables them to create complex 3D game assets efficiently and optimize viewport performance, enhancing their contributions to game development.**	**K2, K3**
CO3	**Will be proficient in creating game-ready vehicles, from modeling and topology to texturing and material assignment, enhancing their ability to contribute to the visual aspects of game development.**	**K3,K6**
CO4	**Able to create optimized textures and shaders for enhanced game visuals and contributions to game development.**	**K3,K6**
CO5	**Able to visualize and develop immersive 3D game environments, leveraging game engine tools for terrain, assets, and scale management.**	**K1,K 3**

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M(2)	M(2)	S(3)	M(2)	S(3)	M(2)	M(2)	L(1)	L(1)	S(3)
CO2	S(3)	M(2)	S(3)	M(2)	S(3)	M(2)	M(2)	L(1)	L(1)	S(3)
CO3	S(3)	S(3)	S(3)	M(2)	S(3)	S(3)	S(3)	L(1)	L(1)	S(3)
CO4	S(3)	S(3)	S(3)	M(2)	S(3)	S(3)	S(3)	L(1)	L(1)	S(3)
CO5	S(3)	S(3)	S(3)	M(2)	S(3)	S(3)	S(3)	L(1)	L(1)	S(3)
W.AV	2.8	2.6	3	2	3	2.6	2.6	1	1	3

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S(3)	S(3)	S(3)	S(3)	S(3)
CO2	S(3)	S(3)	S(3)	S(3)	S(3)
CO3	S(3)	S(3)	S(3)	S(3)	S(3)
CO4	M(2)	M(2)	M(2)	M(2)	M(2)
CO5	S(3)	S(3)	S(3)	S(3)	S(3)
W.AV	2.8	2.8	2.8	2.8	2.8

S–Strong (3), M-Medium (2), L-Low (1)

III-Semester- Allied Course					
Allied	**Course Code: 82837**	**3D Digital Art For Games- Practical**	**P**	**Credits: 2**	**Hours:2**
Objective	**1. Develop the ability to create immersive 3D environments for games.** **2. Master prop modeling techniques with appropriate textures.** **3. Learn to create game environments using a game engine.** **4. Enhance 3D modeling skills by creating complex structures from primitives.** **5. Learn to integrate assets into a game engine environment.**				

1. Introduction to 3D environment design. Conceptualizing and planning a 3D environment. Basic 3D modeling techniques. Texturing and material application for environment assets. Exporting and importing assets into game engines. Building and optimizing a 3D digital environment.
2. Prop modeling techniques. Creating 3D prop models for in-game use. Unwrapping UV maps for props. Applying suitable textures and materials. Realistic rendering and lighting for props.
3. Game engine basics (e.g., Unity, Unreal Engine). Setting up a game environment project. Importing and organizing assets. Level design and scene composition. Lighting, shadows, and atmosphere. Environmental storytelling and player interaction.
4. Transforming primitive shapes into complex objects. Adding details and geometry. UV mapping and texturing for custom objects. Incorporating custom shapes into game environments.
5. Importing and placing assets in game engines. Fine-tuning environment details (e.g., terrain, foliage).Implementing interactive elements. Testing and optimizing environments for performance. Presentation and sharing of completed game environments.

Outcome	**1. Able to produce a fully realized 3D digital environment based on a provided concept.** **2. Able to create a detailed prop model with suitable textures, optimizing it for game use.** **3. To develop a game environment using a chosen game engine, incorporating existing assets.** **4. Students will design a complex shape by skillfully manipulating a primitive shape.** **5. Able to construct a game environment within a game engine, incorporating their created assets.**

Reference and Text Books:

1. Lanier, L. (2006). *Advanced Maya Texturing and Lighting*. Wiley Publishing, Inc.
2. Spadaro, J., & Kim, D. (2005). *Maya Bible*. Wiley Publishing Inc.
3. Palamar, T. (2010). *Mastering Autodesk Maya 2016*. Sybex.
4. Caplin, S. (2008). *Art & Design in Photoshop*. Elsevier Ltd.
5. Miller, E. (2009). *Autodesk Maya Techniques*. Autodesk, Inc.

Web Resources

https://www.amazon.in/Maya%C2%AE-Hyper-Realistic-Creature-Creation-hands/dp/1897177488
https://www.amazon.in/Advanced-Maya-Texturing-Lighting-Lanier-ebook/dp/B00VYNMYUQ

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S(3)	S(3)	S(3)	M(2)	S(3)	M(2)	S(3)	M(2)	L(1)	S(3)
CO2	S(3)	S(3)	S(3)	M(2)	S(3)	M(2)	S(3)	M(2)	L(1)	S(3)
CO3	S(3)	S(3)	S(3)	M(2)	S(3)	M(2)	S(3)	M(2)	M(2)	S(3)
CO4	S(3)	S(3)	S(3)	M(2)	S(3)	M(2)	S(3)	M(2)	M(2)	S(3)
CO5	S(3)	S(3)	S(3)	M(2)	S(3)	M(2)	S(3)	M(2)	M(2)	S(3)
W.AV	3	3	3	2	3	2	3	2	1.6	3

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S(3)	S(3)	S(3)	S(3)	S(3)
CO2	S(3)	S(3)	S(3)	S(3)	S(3)
CO3	S(3)	S(3)	S(3)	S(3)	S(3)
CO4	S(3)	S(3)	S(3)	S(3)	S(3)
CO5	S(3)	S(3)	S(3)	S(3)	S(3)
W.AV	3	3	3	3	3

S–Strong (3), M-Medium (2), L-Low (1)

IV – Semester-Core Course					
Core	**Course Code: 82843**	**Procedural Modeling For Games**	**T**	**Credits: 4**	**Hours: 4**
Course Objectives	1. **Introduction of concept of proceduralism and its significance in 3D modeling and game design. Familiarize students with Side Fx Houdini.** 2. **Foundational 3D modeling skills in Houdini, including creating and manipulating simple shapes.** 3. **To learn procedural bridge-generation tool in Houdini that can customize bridge parameters like width, length, height, and pillar count.** 4. **Introduce students to the concept of Digital Assets in Houdini and guide them in converting their bridge tool into a user-friendly Digital Asset.** 5. **Learn how to import Houdini Digital Assets into game engines and optimize them for real-time performance.**				
Unit I	Understanding the concept of proceduralism in 3D modeling. Introduction to Side Fx Houdini and its role in procedural workflows. Exploring the benefits of proceduralism in game design.				
Unit II	Houdini interface overview. Creating and manipulating basic 3D shapes. Parameter-driven modeling vs. traditional modeling. Saving and organizing Houdini projects.				
Unit III	Setting up the project for bridge generation. Creating a procedural bridge-building tool. Defining parameters for width, length, height, and pillars. Testing and adjusting bridge variations.				
Unit IV	Understanding Digital Assets in Houdini. Converting the bridge tool into a Digital Asset. Creating a user-friendly interface for adjusting parameters. Exporting and using the Digital Asset in game development.				
Unit V	Importing Houdini Digital Assets into game engines (e.g., Unity, Unreal Engine). Setting up materials and textures for procedural assets. Implementing procedural assets in game levels. Testing and optimizing assets for real-time performance.				

Reference and Text Books:

1. Lanier, L. (2006). *Advanced Maya Texturing and Lighting*. Wiley Publishing, Inc.
2. Spadaro, J., & Kim, D. (2005). *Maya Bible*. Wiley Publishing Inc.
3. Palamar, T. (2010). *Mastering Autodesk Maya 2016*. Sybex.
4. Caplin, S. (2008). *Art & Design in Photoshop*. Elsevier Ltd.
5. Miller, E. (2009). *Autodesk Maya Techniques*. Autodesk, Inc.

Web Resources

https://www.amazon.in/Maya%C2%AE-Hyper-Realistic-Creature-Creation-hands/dp/1897177488
https://www.amazon.in/Advanced-Maya-Texturing-Lighting-Lanier-ebook/dp/B00VYNMYUQ

Course Outcome

CO1	**Able to understand the fundamentals of procedural modeling and be able to navigate the Houdini interface.**	**K1,K2**
CO2	**Will be proficient in creating basic 3D models and objects within Houdini.**	**K1,K2, K6**
CO3	**To develop a functional bridge-generation tool and understand the concept of parameter-driven modeling.**	**K3**
CO4	**To create a custom Digital Asset with a tailored user interface for adjusting parameters.**	**K1,K6**
CO5	**Will successfully integrate procedural assets into game development projects.**	**K1,K2, K3**

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S(3)	S(3)	S(3)	M(2)	S(3)	S(3)	S(3)	S(3)	S(3)	S(3)
CO2	S(3)	S(3)	S(3)	M(2)	M(2)	S(3)	M(2)	M(2)	M(2)	M(2)
CO3	S(3)	S(3)	S(3)	M(2)	M(2)	S(3)	M(2)	M(2)	M(2)	M(2)
CO4	S(3)	S(3)	S(3)	M(2)	M(2)	S(3)	M(2)	M(2)	M(2)	L(1)
CO5	M(2)	S(3)	S(3)	M(2)	M(2)	S(3)	M(2)	M(2)	M(2)	L(1)
W.AV	2.8	3	3	2	2.2	3	2.2	2.2	2.2	1.8

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S(3)	S(3)	S(3)	S(3)	M(2)
CO2	S(3)	S(3)	S(3)	S(3)	M(2)
CO3	S(3)	S(3)	S(3)	S(3)	S(3)
CO4	S(3)	M(2)	M(2)	S(3)	M(2)
CO5	S(3)	S(3)	S(3)	S(3)	S(3)
W.AV	3	2.8	2.8	3	2.4

S–Strong (3), M-Medium (2), L-Low (1)

IV – Semester-Core Course					
Core	**Course Code: 82844**	**Level Design for Game**	**T**	**Credits: 4**	**Hours: 4**
Course Objectives	1. **To develop expertise in level design, focusing on ideation, planning, and effective use of camera perspectives.** 2. **To learn 2D level art and design, emphasizing sprite design, pixel art, and effective level creation.** 3. **To learn 3D multiplayer level design, focusing on core game components, level planning, and playtesting.** 4. **To learn 3D single-player level design, emphasizing key factors like room layout, textures, and lighting.** 5. **To learn sandbox level creation, focusing on terrain sculpting, texture layering, vegetation placement, and atmosphere design.**				
Unit I	Level design - Level ideation- top view planning – grid sheet and space planning – Camera and focal view – Perspective for better level design – Coloring perspective- Perspective for level design – isometric art and 2d platform design				
Unit II	2D level art and design -Photoshop for sprite design-pixel ratios and pixel art-sprite animation- BG design-maze – Introduction to level design – level design difference between 2d and 3d –principles and segments - 2d landscape painting				
Unit III	3D multiplayer level design -Understanding the game – identifying core game components – to pview plan – introduction to hammer/radiant – identifying game play – blocking and playing andexecuting textures and clips – play testing – detailing – play testing and finalizing				
Unit IV	3D single player level design- Brush concepts – Room - scale factor – texture – lights - staticmeshes - triggers - Building level - Level mapping – lights setup – adding existing meshes				
Unit V	Sand box-terrain-height map-scaling-texture layers-terrain textures-resolution-vegetation-flora-setting time – adding atmosphere-road object.				

Reference and Text Books:

1. Fullerton, T. (2014). *Game Design Workshop: A Play-Centric Approach*.
2. Schell, J. (2014). *The Art of Game Design: A Book of Lenses* (2nd ed.). A K Peters.
3. Friedmann, A. (2014). *Writing for Visual Media*. Focal Press.
4. Brinkmann, R. (2008). *The Art and Science of Digital Compositing*. Morgan Kaufmann.
5. Zimmerman, E., & Salen, K. (2003). *Rules of Play: Game Design Fundamentals*. MIT Press.
6. Romero, B., & Schreiber, I. (2009). *Challenges for Game Designers*

Web Resources

https://www.amazon.in/Rules-Play-Design-Fundamentals-Press/dp/0262240459
https://www.amazon.in/Challenges-Game-Designers-Brenda-Brathwaite/dp/158450580X

Course Outcome

CO1	**Able to develop unique level designs, creating engaging game levels with a strong emphasis on aesthetics and gameplay.**	**K3**
CO2	**Able to craft engaging 2D game levels with pixel-perfect detail and aesthetics, enhancing the overall gaming experience.**	**K1, K3**
CO3	**Able to craft immersive multiplayer levels, contributing to exceptional gaming experiences through effective playtesting and refinement.**	**K1, K3**
CO4	**Able to craft captivating single-player game levels, enriching player experiences through meticulous design.**	**K1, K3**
CO5	**Able to create sandbox level designs, creating dynamic and visually appealing game environments with realistic terrain, vegetation, and atmospheric elements.**	**K1, K6**

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S(3)	S(3)	S(3)	M(2)	M(2)	M(2)	M(2)	L(1)	M(2)	S(3)
CO2	S(3)	S(3)	S(3)	M(2)	M(2)	M(2)	M(2)	L(1)	M(2)	S(3)
CO3	S(3)	S(3)	S(3)	M(2)	M(2)	M(2)	M(2)	L(1)	M(2)	S(3)
CO4	M(2)	M(2)	M(2)	L(1)	M(2)	M(2)	M(2)	L(1)	M(2)	S(3)
CO5	M(2)	M(2)	M(2)	L(1)	M(2)	M(2)	M(2)	L(1)	M(2)	S(3)
W.AV	2.6	2.6	2.6	1.6	2	2	2	1	2	3

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S(3)	S(3)	S(3)	M(2)	S(3)
CO2	S(3)	S(3)	S(3)	M(2)	S(3)
CO3	S(3)	S(3)	S(3)	M(2)	S(3)
CO4	S(3)	S(3)	S(3)	M(2)	S(3)
CO5	S(3)	S(3)	S(3)	M(2)	S(3)
W.AV	3	3	3	2	3

S–Strong (3), M-Medium (2), L-Low (1)

IV-Semester- Core Course					
Core	**Course Code: 82845**	**Level Design for Game- Practical**	**P**	**Credits: 3**	**Hours:3**
Objective	1. **Develop a deep understanding of level design principles.** 2. **Master the art of creating comprehensive level design documents.** 3. **Enhance level design skills by recreating levels from existing games.** 4. **Develop proficiency in designing levels for 2D games.** 5. **Master the art of designing multiplayer levels in 3D.**				
1. Understanding the game's genre and target audience Player experience and level design goals Flow and pacing in level design Creating memorable and engaging game play sequences 2. Elements of a level design document (LDD)Documenting game play mechanics and objectives Level layout and asset placement Collaboration with artists, programmers, and writers in documentation 3. Analyzing existing game levels for design principles Reverse engineering level layouts Understanding player progression in existing games Adding personal creativity while adhering to the original game's vision 4. Unique challenges of 2D level design (plat formers, puzzles, etc.)Tile-based level design techniques Environmental storytelling in 2D levels Creating compelling challenges and obstacles 5. Design considerations for multiplayer levels Balancing competitive and cooperative game play Map layout and spawn point design for multiplayer Integrating player feedback for refinement					
Outcome	**1. To create a level design for a given game concept.** **2. Able to produce a level design document using provided blueprints.** **3. To recreate a level design for an existing game.** **4. To create level designs for 2D games.** **5. Able to create level designs and implement a 3D multiplayer game level based on a provided prompt. elements.**				
Reference and Text Books: 1. Fullerton, T. (2014). *Game Design Workshop: A Play-Centric Approach*. 2. Schell, J. (2014). *The Art of Game Design: A Book of Lenses* (2nd ed.). A K Peters. 3. Zimmerman, E., & Salen, K. (2003). *Rules of Play: Game Design Fundamentals*. MIT Press. 4. Romero, B., & Schreiber, I. (2009). *Challenges for Game Designers*					
Web Resources https://www.amazon.in/Rules-Play-Design-Fundamentals-Press/dp/0262240459 https://www.amazon.in/Challenges-Game-Designers-Brenda-Brathwaite/dp/158450580X					

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S(3)	S(3)	S(3)	M(2)	M(2)	M(2)	M(2)	L(1)	M(2)	S(3)
CO2	S(3)	S(3)	S(3)	M(2)	M(2)	M(2)	M(2)	L(1)	M(2)	S(3)
CO3	S(3)	S(3)	S(3)	M(2)	M(2)	M(2)	M(2)	L(1)	M(2)	S(3)
CO4	M(2)	M(2)	M(2)	L(1)	M(2)	M(2)	M(2)	L(1)	M(2)	S(3)
CO5	M(2)	M(2)	M(2)	L(1)	M(2)	M(2)	M(2)	L(1)	M(2)	S(3)
W.AV	2.6	2.6	2.6	1.6	2	2	2	1	2	3

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S(3)	S(3)	S(3)	M(2)	S(3)
CO2	S(3)	S(3)	S(3)	M(2)	S(3)
CO3	S(3)	S(3)	S(3)	M(2)	S(3)
CO4	S(3)	S(3)	S(3)	M(2)	S(3)
CO5	S(3)	S(3)	S(3)	M(2)	S(3)
W.AV	3	3	3	2	3

S–Strong (3), M-Medium (2), L-Low (1)

IV – Semester-Allied Course					
Allied	**Course Code: 82846**	**3D Character Design for Game**	**T**	**Credits: 3**	**Hours: 3**
Course Objectives	**1. Develop students' expertise in character creation, emphasizing modeling fundamentals, topology, texture application, and optimization.** **2. Equip students with advanced character unwrapping, texturing, and sculpting skills for game design.** **3. Familiarizing with 3D sculpting software and its interface, covering advanced sculpting techniques for character and high-poly model creation, including polygroups, Dynamesh, Retopology, map baking, transpose, and Zmodeler.** **4. Introduction to Physically Based Rendering (PBR) principles, PBR texturing techniques, map baking, and advanced map baking techniques using software like Painter.** **5. Introduction to animation for games, covering rigging basics, tools, primitive rigging, advanced rigging, animation cycles for game engines, and the process of importing animations into engines.**				
Unit I	Character creation for games, character modeling basics – proportion and layout – character topology – building character body mesh – creating hands and feet – building a profile of the character shape – handling hair and face mesh – assigning basic colour maps – baking detail to low poly				
Unit II	Unwrapping, texturing and material allocation – Next-Gen character unwrapping – character unwraping– Introduction to sculpitng – sculpting tools – sculpting brushes – alpha textures – character detailing – texturing character specular, normal, diffuse maps				
Unit III	Introduction to 3D Sculpting software and interface - 3D Character and High poly model Sculpting techniques- polygroups - Dynamesh- Retopology - Map baking - transpose - Advance Brush technique - Zmodeler				
Unit IV	Introduction to PBR - painter- texturing techniques - Map baking - Importing high & low poly - PBR texturing techniques - Advance map baking technique				
Unit V	Introduction to animation for games - introduction to rigging and tools - Primitive rig - Basic rigging- Advance Rigging – - animation cycles for engines - importing into engines.				

Reference and Text Books:

1. de Byl, P. (2011). Holistic Game Development with Unity: An All-in-One Guide to Implementing Game Mechanics, Art, Design and Programming. Focal Press.
2. Blackman, S. (2011). Beginning 3D Game Development with Unity: All-in-one, multi-platform game development. Apress.
3. Allen, E., & Murdock, K. L. (2008). Body Language: Advanced 3D Character Rigging. Wiley.
4. Watkins, A. (2011). Creating Games with Unity and Maya. Focal Press

Web Resources

https://www.sciencedirect.com/book/9780240818818/creating-games-with-unity-and-maya
https://www.amazon.in/Holistic-Game-Development-Unity-All/dp/0240819330

Course Outcome

CO1	**Able to craft visually appealing and optimized game characters, contributing to immersive gaming experiences.**	**K3,K6**
CO2	**Able to create visually stunning and realistic game characters through effective unwrapping, sculpting, and texture map creation.**	**K2,K6**
CO3	**proficient in using 3D sculpting software to create detailed character and high-poly models, employing advanced techniques for efficient modeling and map creation, enhancing their capabilities as game designers.**	**K2,K6**
CO4	**Develops an understanding of PBR principles and will be proficient in creating high-quality textures, map baking, and employing advanced techniques to optimize texture rendering in games, enhancing their game design skills.**	**K1,K3**
CO5	**Able to create animation for games, proficiently rigging characters and objects, creating complex animations, and seamlessly integrating them into game engines, enhancing their game design capabilities.**	**K1,K6**

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S(3)	S(3)	S(3)	M(2)	M(2)	L(1)	M(2)	L(1)	L(1)	S(3)
CO2	S(3)	S(3)	S(3)	M(2)	M(2)	L(1)	M(2)	L(1)	L(1)	S(3)
CO3	S(3)	S(3)	S(3)	M(2)	M(2)	L(1)	M(2)	L(1)	L(1)	S(3)
CO4	M(2)	S(3)	S(3)	L(1)	M(2)	L(1)	M(2)	M(2)	M(2)	M(2)
CO5	M(2)	S(3)	S(3)	L(1)	M(2)	L(1)	M(2)	L(1)	L(1)	S(3)
W.AV	2.6	3	3	1.6	2	1	2	1.2	1.2	2.8

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S(3)	S(3)	S(3)	M(2)	S(3)
CO2	S(3)	S(3)	S(3)	M(2)	S(3)
CO3	S(3)	S(3)	S(3)	M(2)	S(3)
CO4	S(3)	S(3)	S(3)	M(2)	S(3)
CO5	S(3)	S(3)	S(3)	M(2)	S(3)
W.AV	3	3	3	2	3

S–Strong (3), M-Medium (2), L-Low (1)

<table>
<tr><th colspan="6">IV-Semester- Allied Course</th></tr>
<tr><td>Allied</td><td>Course Code: 82847</td><td>3D Character Design for Game- Practical</td><td>P</td><td>Credits: 2</td><td>Hours:2</td></tr>
<tr><td>Objective</td><td colspan="5">1. To integrate character modeling and texturing skills to create fully realized 3D characters.
2. To introduce students to character rigging and animation principles.
3. To broaden modeling and texturing skills to encompass environmental assets.
4. To foster expertise in texture creation for specific materials.
5. To further refine character animation skills with a variety of animations.</td></tr>
<tr><td colspan="6">1. Expanding from the face to the full character Maintaining proportions and anatomy Sculpting character details: clothing, accessories, etc. Texture detailing for character clothing and accessories Consistency with the reference design Finalizing and optimizing the character model
2. Introduction to character rigging Creating a basic rig for animation Understanding keyframes and timing Walk and run cycle principles Animating the character's walk and run cycles Polishing and refining animations
3. Organic modeling techniques Creating tree branches and foliage UV mapping for complex shapes Painting realistic tree textures Importance of LOD (Level of Detail) for performance Exporting tree models for game use
4. Analyzing real-world rusted metal surfaces Texture creation for rust and weathering effects Using shaders and filters for a weathered look Applying the texture to 3D objects Testing the texture in a game engine environment
5. Expanding animation skills to include more actions Understanding character physics and movements Designing and animating character jumps Creating idle animations for character interaction Integrating multiple animations into a game engine Testing and refining character animations</td></tr>
<tr><td>Outcome</td><td colspan="5">1. Will be capable of designing and modeling characters with meticulous attention to detail, while also applying suitable textures that enhance their visual appeal and narrative role.
2. Acquire the knowledge and skills necessary to rig and animate 3D characters, including creating smooth and realistic walk and run cycles
3. Students will become proficient at constructing 3D tree models with convincing textures, suitable for integration into game environments.
4. Students will gain proficiency in crafting realistic textures for various surfaces, such as rusted metal, enhancing the immersive quality of game environments.
5. Students will develop the ability to produce character animations encompassing essential actions like walking, jumping, and idling, enriching the expressiveness and interactivity of game characters.</td></tr>
<tr><td colspan="6">Reference and Text Books:
1. de Byl, P. (2011). Holistic Game Development with Unity: An All-in-One Guide to Implementing Game Mechanics, Art, Design and Programming. Focal Press.
2. Blackman, S. (2011). Beginning 3D Game Development with Unity: All-in-one, multi-platform game development. Apress.
3. Allen, E., & Murdock, K. L. (2008). Body Language: Advanced 3D Character Rigging. Wiley.
4. Watkins, A. (2011). Creating Games with Unity and Maya. Focal Press</td></tr>
<tr><td colspan="6">Web Resources
https://www.sciencedirect.com/book/9780240818818/creating-games-with-unity-and-maya
https://www.amazon.in/Holistic-Game-Development-Unity-All/dp/0240819330</td></tr>
</table>

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S(3)	S(3)	S(3)	M(2)	M(2)	L(1)	M(2)	L(1)	L(1)	S(3)
CO2	S(3)	S(3)	S(3)	M(2)	M(2)	L(1)	M(2)	L(1)	L(1)	S(3)
CO3	S(3)	S(3)	S(3)	M(2)	M(2)	L(1)	M(2)	L(1)	L(1)	S(3)
CO4	M(2)	S(3)	S(3)	L(1)	M(2)	L(1)	M(2)	M(2)	M(2)	M(2)
CO5	M(2)	S(3)	S(3)	L(1)	M(2)	L(1)	M(2)	L(1)	L(1)	S(3)
W.AV	2.6	3	3	1.6	2	1	2	1.2	1.2	2.8

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S(3)	S(3)	S(3)	M(2)	S(3)
CO2	S(3)	S(3)	S(3)	M(2)	S(3)
CO3	S(3)	S(3)	S(3)	M(2)	S(3)
CO4	S(3)	S(3)	S(3)	M(2)	S(3)
CO5	S(3)	S(3)	S(3)	M(2)	S(3)
W.AV	3	3	3	2	3

S–Strong (3), M-Medium (2), L-Low (1)

V – Semester-Core Course					
Core	**Course Code: 82851**	**Business of Media**	**T**	**Credits: 4**	**Hours: 4**
Course Objectives	1. Identify Key Components of Effective Business Communication 2. Evaluate and Enhance Business Partnerships 3. Apply Innovative Approaches to Project Planning 4. Analyze and Mitigate Risks in Business Communication 5. Create and Manage Project Budgets				
Unit I	Types of Business Organisation – Private Sector and Public Sector – Firms in the Privatesector –Key Differences – Co-operatives – Franchises – Not for Profit Businesses.				
Unit II	Organisational Structures – Importance of Structure – Key Terms – Ways to Structure a Business– Pros and Cons of Different Structures – Functional Structure - Organisation by Product/Activity – Organisation by Area – By Customer – By Process.				
Unit III	Stakeholders – Pressures on Business – Types of Stakeholder – Internal and External Stakeholders – Characteristics of Stakeholders - Owners and Shareholders – Managers –Employees or Staff – Customers – Suppliers – Community – Government.				
Unit IV	Introduction to Business Studies – Business Objectives and Strategy – Marketing – Market Analysis – Marketing Strategy – Market Research – Marketing Mix – Human Resources –Production/Operations Management – Accounting and Finance – External Influences –Market Structures – Macro and Micro Economics.				
Unit V	Introduction to Create Startup– Challenges of the Entrepreneur –The Ideology of Competition–Entrepreneur Paradox –Business Communication – Importance of Communication – Forms of Business Structure– Channels of Communication.				

Reference and Text Books:

1. Thiel, P. (Year). *Zero to One: Notes on Startups, or How to Build the Future*. Crown Business, 2014.
2. Lieberman, A., Esgate, P. (Year). *The Entertainment Marketing Revolution: Bringing the Moguls, the Media, and the Magic to the World*. Financial Times Prentice Hall.
3. Resnik, G. (Year). *All You Need to Know About the Movie and TV Business*. Fireside.
4. Alexander, A., Owers, J., Carveth, R. A., Hollifield, C. A., & Greco, A. N. (Year). *Media Economics: Theory and Practice (LEA's Communication Series)*. Lawrence Erlbaum Associates.
5. Picard, R. G. (Year). *The Economics and Financing of Media Companies*. Fordham University Press.
6. Doyle, G. (Year). *Understanding Media Economics*. Sage Publications Ltd

Web Resources

Course Outcome

CO1	Comprehensive Understanding of Effective Business Communication	K2
CO2	Strategic Business Partnership Enhancement	K2 & K3
CO3	Innovative Project Planning and Implementation	K3
CO4	Project Budgeting Proficiency	K5
CO5	Timely Implementation of Project Plans and Policies	K3&K6

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	L(1)	L(1)	L(1)	M(2)	L(1)	L(1)	S(3)	S(3)	S(3)	S(3)
CO2	L(1)	L(1)	L(1)	M(2)	L(1)	L(1)	S(3)	S(3)	S(3)	S(3)
CO3	L(1)	L(1)	L(1)	M(2)	L(1)	L(1)	S(3)	S(3)	S(3)	S(3)
CO4	L(1)	L(1)	L(1)	M(2)	L(1)	L(1)	S(3)	S(3)	S(3)	S(3)
CO5	L(1)	L(1)	L(1)	M(2)	L(1)	L(1)	S(3)	S(3)	S(3)	S(3)
W.AV	1	1	1	2	1	1	3	3	3	3

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L(1)	L(1)	L(1)	M(2)	L(1)
CO2	L(1)	L(1)	L(1)	M(2)	L(1)
CO3	L(1)	L(1)	L(1)	M(2)	L(1)
CO4	L(1)	L(1)	L(1)	M(2)	L(1)
CO5	L(1)	L(1)	L(1)	M(2)	L(1)
W.AV	1	1	1	2	1

S–Strong (3), M-Medium (2), L-Low (1)

V – Semester-Core Course					
Core	**Course Code: 82852**	**Portfolio & Presentation**	**T**	**Credits: 4**	**Hours: 4**
Course Objectives	1. TO Apply design principles consistently across various projects to create a cohesive portfolio 2. Develop a plan for improvement based on self-evaluation feedback. 3. .Receive and assimilate feedback from peers to enhance the quality of their own work. 4. Demonstrate proficiency in executing techniques that are appropriate for specific design challenges. 5. Create visual documentation illustrating the evolution of ideas from initial concepts to final executions.				
Unit I	Basics of Portfolio, Importance of portfolio, Elements in Portfolio - Types of Portfolio – The Effective Showcase - Development Techniques - Portfolio requirements - Portfolio Development Techniques Do's and Don'ts.				
Unit II	Introduction to the Digital Portfolio - The Effective Digital Showcase – Production Techniques -Design document, Different stages of digital media of their specialization -- Digital Portfolio Do's and Don'ts.				
Unit III	Presentation: Preparing professional Theatre/TV/Film Portfolio Presentation Techniques Professional presentation skill - Presentation Format and requirements.				
Unit IV	Marketing: Business Cards - Blog and Web pages - Importance of Business Cards, Blog and Web pages - Design and development of Business Cards, Blog and Web pages - Market analysis for using medium of marketing - Introduction to social networking and its Importance				
Unit V	Portfolio Maintenance - Components of a Portfolio - Audience, Tone, Range Format, Portfolio Guidelines - Portfolio Design - Portfolio Budget and Deadline planning - Publishing your portfolio - Portfolio enhancement.				

Reference and Text Books:

1. Jaen, R. (2006). *Developing and Maintaining a Design-Tech Portfolio: A Guide for Theatre, Film and TV*.
2. Eisenman, S. (2004). *Building Design Portfolios: Innovative Concepts for Presenting Your Work (Design Field Guides)*.
3. Myers, D. R. (2005). *The Graphic Designer's Guide to Portfolio Design*. Wiley.
4. Steel, J. (2006). *Perfect Pitch: The Art of Selling Ideas and Winning New Business*. Wiley.
5. Schmidt, T. (2009). *Strategic Project Management Made Simple: Practical Tools for Leaders and Teams*. Wiley.

Course Outcome

CO1	Students will demonstrate an advanced level of design and presentation skills through the production of a diverse range of work.	K1& K2
CO2	Students will engage in constructive peer critique, providing and receiving feedback in a professional and respectful manner.	K4&K 5
CO3	The work produced will highlight proficiency in the application of both traditional and contemporary design techniques.	K6
CO4	Students will effectively demonstrate the progression of ideas from the conceptual stage to completion in their projects.	K1&K 6
CO5	The work produced will reflect an understanding of how design principles contribute to the overall effectiveness of visual communication.	K6

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S(3)	S(3)	S(3)	M(2)	S(3)	M(2)	S(3)	M(2)	M(2)	S(3)
CO2	S(3)	S(3)	S(3)	M(2)	S(3)	M(2)	S(3)	M(2)	M(2)	S(3)
CO3	S(3)	S(3)	S(3)	M(2)	S(3)	M(2)	S(3)	M(2)	M(2)	S(3)
CO4	S(3)	S(3)	S(3)	M(2)	S(3)	M(2)	S(3)	M(2)	M(2)	S(3)
CO5	S(3)	S(3)	S(3)	M(2)	S(3)	M(2)	S(3)	M(2)	M(2)	S(3)
W.AV	3	3	3	2	3	2	3	2	2	3

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S(3)	S(3)	S(3)	S(3)	S(3)
CO2	S(3)	S(3)	S(3)	S(3)	S(3)
CO3	S(3)	S(3)	S(3)	S(3)	S(3)
CO4	S(3)	S(3)	S(3)	S(3)	S(3)
CO5	S(3)	S(3)	S(3)	S(3)	S(3)
W.AV	3	3	3	3	3

S–Strong (3), M-Medium (2), L-Low (1)

V – Semester-DSE 1					
DSE 1	**Course Code: 82853A**	**1.Advanced Illustration**	**T**	**Credits: 4**	**Hours: 4**
Course Objectives	1. Understand the principles of spatial design and how it impacts player experience. 2. Develop the ability to create atmospheric and cohesive game environments. 3. Master techniques for balancing aesthetics with practical considerations in level design.. 4. Enhance their collaboration and communication skills, working effectively with other team members and stakeholders within a game development context. 5. Demonstrate adaptability in their illustration styles, showcasing the ability to create assets suitable for a diverse range of game genres and themes.				
Unit I	Introduction to spatial storytelling in games. Analyzing the impact of environment layout on player navigation. Case studies of successful game environments and their design principles				
Unit II	Techniques for conveying mood and atmosphere through environmental elements. Exploration of color theory and lighting to enhance the visual appeal of game spaces. Hands-on exercises in creating concept art for immersive settings.				
Unit III	Understanding the relationship between aesthetics and game play functionality. Applying spatial design principles to enhance player engagement. Case studies of level design in popular games.				
Unit IV	Integrating visual storytelling with game play mechanics. Designing environments that support the narrative and enhance the gaming experience. Collaborative project: Students work in teams to design a game level, considering both aesthetics and game play.				
Unit V	Peer critiques and feedback on individual and group projects. Iterative design process based on feedback received. Finalization of environment designs for portfolio inclusion				
Reference and Text Books: Jones, M. (2020). *Digital Painting Techniques*. 3DTotal Publishing. Robertson, S. (2005). *The Skillful Huntsman*. Design Studio Press.					

Course Outcome

CO1	will demonstrate mastery of advanced digital illustration techniques, including but not limited to texture mapping, digital painting, and stylized rendering.	K2
CO2	be able to ideate, conceptualize, and visualize original and compelling game characters and environments, translating ideas from initial sketches to fully realized illustrations.	K3
CO3	will apply their illustration skills to enhance the overall game design, ensuring that visual elements contribute meaningfully to the player experience.	K6
CO4	develop professional workflows for illustration projects, managing time effectively and collaborating seamlessly with other members of a game development team	K3
CO5	will showcase their ability to adapt illustration styles to suit various game genres, demonstrating versatility and an understanding of the visual requirements of different gaming experiences.	K5

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S(3)	S(3)	S(3)	M(2)	S(3)	M(2)	S(3)	L(1)	S(3)	S(3)
CO2	S(3)	S(3)	S(3)	M(2)	S(3)	M(2)	S(3)	L(1)	S(3)	S(3)
CO3	S(3)	S(3)	S(3)	M(2)	S(3)	M(2)	S(3)	L(1)	S(3)	S(3)
CO4	S(3)	S(3)	S(3)	M(2)	S(3)	M(2)	S(3)	L(1)	S(3)	S(3)
CO5	S(3)	S(3)	S(3)	M(2)	S(3)	M(2)	S(3)	L(1)	S(3)	S(3)
W.AV	3	3	3	2	3	2	3	1	3	3

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S(3)	S(3)	S(3)	M(2)	S(3)
CO2	S(3)	S(3)	S(3)	M(2)	S(3)
CO3	S(3)	S(3)	S(3)	M(2)	S(3)
CO4	S(3)	S(3)	S(3)	M(2)	S(3)
CO5	S(3)	S(3)	S(3)	M(2)	S(3)
W.AV	3	3	3	2	3

S–Strong (3), M-Medium (2), L-Low (1)

V – Semester-DSE 1					
DSE 1	**Course Code: 82853B**	**2.Figure Modeling**	**T**	**Credits: 4**	**Hours: 4**
Course Objectives	1. Develop technical proficiency in 3D modeling software for character creation. 2. Gain a deep understanding of human anatomy to create realistic and proportionate character models. 3. Learn techniques for infusing expressive and unique qualities into character designs. 4. Develop the ability to adapt figure modeling to suit various game genres and art styles. 5. Understand collaborative workflows for character modeling within game development teams.				
Unit I	● Overview of 3D modeling software tools. ● Introduction to basic modeling techniques and tools. ● Hands-on exercises for creating simple 3D shapes.				
Unit II	● In-depth study of human anatomy for character modeling. ● Proportions, skeletal structure, and muscle groups. ● Anatomy in motion: capturing dynamic poses.				
Unit III	● Exploration of different art styles in character design. ● Techniques for creating stylized and realistic character models. ● Case studies of characters from popular games.				
Unit IV	● Adding personality and emotion to character models. ● Facial expressions, body language, and pose considerations. ● Project: Create a character model with a distinct personality.				
Unit V	● Analyzing character design requirements for different game genres. ● Developing characters for action, adventure, RPG, and other genres. ● Class project: Adapting a character model to fit a specified game genre.				
Reference and Text Books: **Gahan, A. (2008). *Digital Character Development: Theory and Practice*. New Riders.** **Spencer, S. (2010). *ZBrush Digital Sculpting Human Anatomy*. Sybex.**					

Course Outcome

CO1	Demonstrate advanced proficiency in creating detailed 3D character models using industry-standard software.	K2
CO2	Create character models with accurate anatomical proportions, considering both stylized and realistic design principles.	K3
CO3	Develop characters that convey personality and narrative through thoughtful modeling choices.	K6
CO4	Showcase the ability to adapt figure modeling to fit diverse game genres, from realistic simulations to stylized fantasy.	K3
CO5	Work collaboratively within a game development team, integrating figure modeling seamlessly into the larger design and development process.	K5

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S(3)	S(3)	S(3)	M(2)	S(3)	M(2)	S(3)	L(1)	S(3)	S(3)
CO2	S(3)	S(3)	S(3)	M(2)	S(3)	M(2)	S(3)	L(1)	S(3)	S(3)
CO3	S(3)	S(3)	S(3)	M(2)	S(3)	M(2)	S(3)	L(1)	S(3)	S(3)
CO4	S(3)	S(3)	S(3)	M(2)	S(3)	M(2)	S(3)	L(1)	S(3)	S(3)
CO5	S(3)	S(3)	S(3)	M(2)	S(3)	M(2)	S(3)	L(1)	S(3)	S(3)
W.AV	3	3	3	2	3	2	3	1	3	3

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S(3)	S(3)	S(3)	M(2)	S(3)
CO2	S(3)	S(3)	S(3)	M(2)	S(3)
CO3	S(3)	S(3)	S(3)	M(2)	S(3)
CO4	S(3)	S(3)	S(3)	M(2)	S(3)
CO5	S(3)	S(3)	S(3)	M(2)	S(3)
W.AV	3	3	3	2	3

S–Strong (3), M-Medium (2), L-Low (1)

V – Semester-DSE 1					
DSE 1	**Course Code: 82853C**	**3.Mech Design**	**T**	**Credits: 4**	**Hours: 4**
Course Objectives	1. Develop technical proficiency in designing intricate and functional mechanical elements for games. 2. Cultivate creative thinking and ideation skills for the conceptualization of unique and innovative mech designs. 3. Develop the ability to adapt mech designs to suit different game genres, from futuristic sci-fi to steampunk aesthetics. 4. Understand how mech designs seamlessly integrate into broader game design principles, contributing to gameplay and narrative. 5. Enhance collaboration and communication skills within a game development team, particularly in Mech Design projects.				
Unit I	● Overview of mech design in games and other media. ● Basic principles of mech functionality and design aesthetics. ● Hands-on exercises for sketching basic mech concepts.				
Unit II	● Techniques for brainstorming and ideation in mech design. ● Developing a design language for mechs. ● Project: Creating initial concept sketches for a unique mech design.				
Unit III	● Analyzing design requirements for mechs in different game genres. ● Adapting mechs to fit sci-fi, fantasy, and other genre aesthetics. ● Case studies of iconic mechs from various games.				
Unit IV	● Understanding the role of mechs in gameplay and narrative. ● Collaborating with game designers to align mech designs with game mechanics. ● Project: Designing a mech that enhances the player experience.				
Unit V	● Effective communication within a game development team. ● Collaborative design projects involving multiple team members. ● Final project: Collaboratively designing and presenting a mech for a hypothetical game.				
Reference and Text Books: **Chiang, D. (2008). *Mechanika: Creating the Art of Science Fiction*. Watson-Guptill.** **Shinkawa, Y. (2018). *The Art of Metal Gear Solid*. Dark Horse Books.**					

Course Outcome

CO1	Demonstrate advanced proficiency in conceptualizing and creating detailed mech designs suitable for game development.	K2
CO2	Generate original and creative concepts for mechs, considering functionality, aesthetics, and narrative relevance.	K3
CO3	Showcase the ability to adapt mech designs to fit various game genres and art styles.	K6
CO4	Integrate mech designs seamlessly into the larger game design process, considering game play mechanics and narrative elements.	K3
CO5	Work collaboratively within a game development team, effectively communicating and implementing mech designs in a cohesive manner.	K5

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S(3)	S(3)	S(3)	M(2)	S(3)	M(2)	S(3)	L(1)	S(3)	S(3)
CO2	S(3)	S(3)	S(3)	M(2)	S(3)	M(2)	S(3)	L(1)	S(3)	S(3)
CO3	S(3)	S(3)	S(3)	M(2)	S(3)	M(2)	S(3)	L(1)	S(3)	S(3)
CO4	S(3)	S(3)	S(3)	M(2)	S(3)	M(2)	S(3)	L(1)	S(3)	S(3)
CO5	S(3)	S(3)	S(3)	M(2)	S(3)	M(2)	S(3)	L(1)	S(3)	S(3)
W.AV	3	3	3	2	3	2	3	1	3	3

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S(3)	S(3)	S(3)	M(2)	S(3)
CO2	S(3)	S(3)	S(3)	M(2)	S(3)
CO3	S(3)	S(3)	S(3)	M(2)	S(3)
CO4	S(3)	S(3)	S(3)	M(2)	S(3)
CO5	S(3)	S(3)	S(3)	M(2)	S(3)
W.AV	3	3	3	2	3

S–Strong (3), M-Medium (2), L-Low (1)

V – Semester-DSE 2					
DSE 2	**Course Code: 82854A**	**1.Creature Sculpt**	**T**	**Credits: 4**	**Hours: 4**
Course Objectives	1. Develop technical proficiency in digital and traditional sculpting techniques for creating detailed and expressive creature designs. 2. Cultivate creative thinking and ideation skills for generating original and imaginative creature concepts. 3. Develop the ability to sculpt creatures that suit various game genres, from fantasy to horror. 4. Understand how creature designs seamlessly integrate into the larger game design process, contributing to narrative and gameplay. 5. Enhance skills in effectively presenting and communicating creature concepts to peers and stakeholders.				
Unit I	● Overview of creature design in games and other media. ● Introduction to digital and traditional sculpting tools and techniques. ● Hands-on exercises for basic creature sculpting.				
Unit II	● Techniques for brainstorming and ideation in creature design. ● Developing a design language for creatures. ● Project: Creating initial concept sketches for a unique creature design.				
Unit III	● Analyzing design requirements for creatures in different game genres. ● Adapting creatures to fit various genre aesthetics. ● Case studies of iconic creatures from popular games.				
Unit IV	● Understanding the role of creatures in gameplay and narrative. ● Collaborating with game designers to align creature designs with game mechanics. ● Project: Designing a creature that enhances the player experience.				
Unit V	● Effective communication of design concepts to peers and stakeholders. ● Creating presentation materials, including digital renders and documentation. ● Final project: Presenting and communicating the design rationale of a creature sculpture.				

Reference and Text Books:

de la Flor, M. (2010). *Digital Sculpting with Mudbox: Essential Tools and Techniques for Artists*. Focal Press.

Gurney, J. (2009). *Imaginative Realism: How to Paint What Doesn't Exist*. Andrews McMeel Publishing.

Course Outcome

CO1	Demonstrate advanced proficiency in digital and traditional sculpting methods, translating ideas into detailed and visually appealing creature sculptures.	K2
CO2	Generate original and creative concepts for creatures, considering anatomy, behavior, and narrative relevance.	K3
CO3	Showcase the ability to adapt creature designs to fit various game genres and art styles.	K6
CO4	Integrate creature designs seamlessly into the larger game design process, considering narrative elements and gameplay mechanics.	K3
CO5	Develop effective presentation and communication skills to convey the concept and design rationale of creature sculptures to an audience.	K5

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S(3)	S(3)	S(3)	M(2)	S(3)	M(2)	S(3)	L(1)	S(3)	S(3)
CO2	S(3)	S(3)	S(3)	M(2)	S(3)	M(2)	S(3)	L(1)	S(3)	S(3)
CO3	S(3)	S(3)	S(3)	M(2)	S(3)	M(2)	S(3)	L(1)	S(3)	S(3)
CO4	S(3)	S(3)	S(3)	M(2)	S(3)	M(2)	S(3)	L(1)	S(3)	S(3)
CO5	S(3)	S(3)	S(3)	M(2)	S(3)	M(2)	S(3)	L(1)	S(3)	S(3)
W.AV	3	3	3	2	3	2	3	1	3	3

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S(3)	S(3)	S(3)	M(2)	S(3)
CO2	S(3)	S(3)	S(3)	M(2)	S(3)
CO3	S(3)	S(3)	S(3)	M(2)	S(3)
CO4	S(3)	S(3)	S(3)	M(2)	S(3)
CO5	S(3)	S(3)	S(3)	M(2)	S(3)
W.AV	3	3	3	2	3

S–Strong (3), M-Medium (2), L-Low (1)

V – Semester-DSE 2					
DSE 2	**Course Code: 82854B**	**2.Hardsurface Sculpting**	**T**	**Credits: 4**	**Hours: 4**
Course Objectives	1. Develop technical proficiency in digital sculpting tools for creating detailed and realistic hardsurface elements. 2. Cultivate creative thinking and ideation skills for generating original and innovative hardsurface designs. 3. Develop the ability to sculpt hard surface elements that suit various game genres, from sci-fi to historical settings. 4. Understand how hardsurface designs seamlessly integrate into the larger game design process, contributing to narrative and gameplay. 5. Enhance skills in effectively presenting and communicating hardsurface design concepts to peers and stakeholders.				
Unit I	● Sketching and blocking out simple hardsurface shapes. ● Exploration of basic sculpting brushes and techniques. ● Analyzing and critiquing early attempts to grasp core concepts.				
Unit II	● Analyzing and deconstructing iconic hardsurface designs in games. ● Group brainstorming sessions to generate innovative design ideas. ● Developing individual concept sketches and receiving peer feedback.				
Unit III	● Collaborative projects where students adapt their existing designs to a randomly assigned game genre. ● Research and analysis of hardsurface elements in games belonging to different genres. ● Presentations and discussions on the challenges and successes of genre adaptation				
Unit IV	● Analyzing case studies where hardsurface elements significantly impact gameplay. ● Brainstorming sessions with game design students to identify collaborative opportunities. ● Developing and presenting a hardsurface design that contributes to a hypothetical game scenario.				
Unit V	● Workshops on creating compelling presentations for design projects. ● Individual and group coaching sessions on effective communication. ● Final project presentations followed by peer and instructor feedback.				
Reference and Text Books: **1. *ZBrush Characters and Creatures* by Kurt Papstein (2019), Packt Publishing.** **2. *The Art of Blizzard Entertainment* by Nick Carpenter (2013), Insight Editions.**					

Course Outcome

CO1	Demonstrate advanced proficiency in digital sculpting methods, translating ideas into detailed and visually appealing hard surface sculptures.	K2
CO2	Generate original and creative concepts for hard surface elements, considering functionality, aesthetics, and narrative relevance.	K3
CO3	Showcase the ability to adapt hard surface designs to fit various game genres and art styles.	K6
CO4	Integrate hard surface designs seamlessly into the larger game design process, considering narrative elements and gameplay mechanics.	K3
CO5	Develop effective presentation and communication skills to convey the concept and design rationale of hard surface sculptures to an audience.	K5

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S(3)	S(3)	S(3)	M(2)	S(3)	M(2)	S(3)	L(1)	S(3)	S(3)
CO2	S(3)	S(3)	S(3)	M(2)	S(3)	M(2)	S(3)	L(1)	S(3)	S(3)
CO3	S(3)	S(3)	S(3)	M(2)	S(3)	M(2)	S(3)	L(1)	S(3)	S(3)
CO4	S(3)	S(3)	S(3)	M(2)	S(3)	M(2)	S(3)	L(1)	S(3)	S(3)
CO5	S(3)	S(3)	S(3)	M(2)	S(3)	M(2)	S(3)	L(1)	S(3)	S(3)
W.AV	3	3	3	2	3	2	3	1	3	3

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S(3)	S(3)	S(3)	M(2)	S(3)
CO2	S(3)	S(3)	S(3)	M(2)	S(3)
CO3	S(3)	S(3)	S(3)	M(2)	S(3)
CO4	S(3)	S(3)	S(3)	M(2)	S(3)
CO5	S(3)	S(3)	S(3)	M(2)	S(3)
W.AV	3	3	3	2	3

S–Strong (3), M-Medium (2), L-Low (1)

V – Semester-DSE 2					
DSE 2	**Course Code: 82854C**	**3.3D Concept Sculpting**	**T**	**Credits: 4**	**Hours: 4**
Course Objectives	1. Develop technical proficiency in Concept sculpting tools 2. Cultivate creative thinking and ideation skills for generating original and innovative concepts 3. Develop the ability to sculpt 2d concepts that suit various game genres, from sci-fi to historical settings. 4. Understand how 2d designs seamlessly integrate into the larger game design process, contributing to narrative and gameplay. 5. Enhance skills in effectively presenting and communicating 2d design concepts to peers and stakeholders.				
Unit I	● Overview of Concept Sculpting in Game Art ● Importance of Concept Sculpting in the Game Design Process ● Historical Perspective: Evolution of Concept Sculpting in Video Games ● Key Terminology and Concepts in Concept Sculpting				
Unit II	● Introduction to Industry-Standard Sculpting Software (e.g., ZBrush, Mudbox) ● User Interface and Navigation ● Basic Tools and Brushes for Sculpting ● Understanding Layers and Detailing				
Unit III	● Importance of Understanding Anatomy in Concept Sculpting ● Proportions, Muscle Structure, and Bone Anatomy ● Character Design Principles ● Case Studies: Anatomy in Popular Game Characters				
Unit IV	● Creating 3D Environments through Sculpting ● Designing Props and Objects for Game Environments ● Incorporating Texture and Detail into Environments ● Case Studies: Environment and Prop Designs in Games				
Unit V	● Techniques for Sculpting Fantasy Creatures ● Balancing Realism and Fantasy in Creature Design ● Creating Unique and Memorable Creatures ● Case Studies: Fantasy Creature Designs in Games				
Reference and Text Books: 1. ***ZBrush Characters and Creatures* by Kurt Papstein (2019), Packt Publishing.** 2. ***The Art of Blizzard Entertainment* by Nick Carpenter (2013), Insight Editions.**					

Course Outcome

CO1	Proficient use of industry-standard 3D sculpting software for game concept creation.	K2
CO2	Apply anatomical principles to design characters and creatures, achieving both realism and creativity.	K3
CO3	Create visually appealing 3D environments and props using sculpting techniques.	K6
CO4	Develop a unique design style for characters, creatures, and environments, balancing creativity with practical game development considerations.	K3
CO5	Clearly convey design ideas and narratives through concept sculpting, demonstrating storytelling skills in game art.	K5

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S(3)	S(3)	S(3)	M(2)	S(3)	M(2)	S(3)	L(1)	S(3)	S(3)
CO2	S(3)	S(3)	S(3)	M(2)	S(3)	M(2)	S(3)	L(1)	S(3)	S(3)
CO3	S(3)	S(3)	S(3)	M(2)	S(3)	M(2)	S(3)	L(1)	S(3)	S(3)
CO4	S(3)	S(3)	S(3)	M(2)	S(3)	M(2)	S(3)	L(1)	S(3)	S(3)
CO5	S(3)	S(3)	S(3)	M(2)	S(3)	M(2)	S(3)	L(1)	S(3)	S(3)
W.AV	3	3	3	2	3	2	3	1	3	3

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S(3)	S(3)	S(3)	M(2)	S(3)
CO2	S(3)	S(3)	S(3)	M(2)	S(3)
CO3	S(3)	S(3)	S(3)	M(2)	S(3)
CO4	S(3)	S(3)	S(3)	M(2)	S(3)
CO5	S(3)	S(3)	S(3)	M(2)	S(3)
W.AV	3	3	3	2	3

S–Strong (3), M-Medium (2), L-Low (1)

V-Semester- DSE 3					
DSE 3	**Course Code: 82855A**	**1. Live with Game Engine**	**P**	**Credits: 4**	**Hours:6**

Objective

1. Create intricate environments demonstrating advanced level design principles.
2. Experiment with lighting configurations to evoke varying emotional responses in the game environment.
3. Build comprehensive character blueprints that include movement, interactions, animations, and sound integration.
4. Design interactive objects, employing Blueprints for seamless character interaction and providing visual and audio feedback.
5. Construct functional HUD/UI elements, such as health and ammo indicators, utilizing for player convenience.

1. **Level Design and Lighting in Unreal Engine:**
   a. Create a small environment with detailed level design.
   b. Experiment with different lighting setups to evoke different moods.
2. **Character Blueprint in Unreal Engine:**
   a. Develop a character blueprint with basic movement and interactions.
   b. Implement animations and sounds for character actions.
3. **Interactive Objects in Unreal Engine:**
   a. Design objects that the character can pick up or interact with.
   b. Use Blueprints to handle object interaction and feedback.
4. **User Interface (UI) Design in Unreal Engine:**
   a. Design and implement a HUD/UI with health, ammo, and other essential indicators.
   b. Use UMG to create functional UI elements.
5. **AI Enemy Behavior in Unreal Engine:**
   a. Create AI enemies with simple behaviors like patrolling or following.
   b. Integrate AI perception to detect the player and react accordingly.
6. **Physics and Destruction in Unreal Engine:**
   Set up physics-based interactions, like breakable objects or moving platforms.
7. **Multiplayer Gameplay in Unreal Engine:**
   a. Establish a multiplayer session with synchronized character movement.
   b. Explore replication techniques for networked gameplay.
8. **Particle Effects in Unreal Engine:**
   Add dynamic particle effects for events like explosions or environmental effects.
9. **Blueprint Scripting Challenges in Unreal Engine:**
   Choose a specific gameplay mechanic (e.g., grappling hook, stealth) and implement it using Blueprints.
10. **Optimization and Packaging in Unreal Engine:**
    a. Optimize a scene for better performance using techniques like culling and LODs.
    b. Package your project for a specific platform and ensure it runs smoothly.

Outcome

1. Generate a well-detailed environment exhibiting a profound understanding of level design techniques.
2. Display expertise in employing diverse lighting setups to manipulate ambiance and emotion within the game world.
3. Develop character blueprints, incorporating movement, interaction, animation, and sound elements for immersive gameplay.
4. Create interactive objects within the game, utilizing Blueprints for smooth interaction mechanics and delivering player feedback.
5. Implement a functional HUD/UI with essential indicators, skillfully utilizing UMG to enhance the player's experience.

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)	S(3)
CO2	S(3)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)	S(3)
CO3	S(3)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)	S(3)
CO4	S(3)	S(3)	S(3)	S(3)	S(3)	S(3)	S(3)	S(3)	S(3)	S(3)
CO5	S(3)	M(2)	S(3)	S(3)	S(3)	S(3)	S(3)	S(3)	S(3)	S(3)
W.AV	**3**	**2.6**	**3**	**2.4**	**3**	**3**	**2.4**	**3**	**3**	**3**

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S(3)	S(3)	M(2)	S(3)	M(2)
CO2	S(3)	S(3)	M(2)	S(3)	M(2)
CO3	S(3)	S(3)	M(2)	S(3)	S(3)
CO4	S(3)	S(3)	M(2)	S(3)	S(3)
CO5	S(3)	S(3)	M(2)	S(3)	S(3)
W.AV	**3**	**3**	**2**	**3**	**2.6**

S–Strong (3), M-Medium (2), L-Low (1)

V-Semester- DSE 3					
DSE 3	**Course Code: 82855B**	**2. VR Game Design**	**P**	**Credits: 4**	**Hours:6**
Objective	**1. Understand VR goals, definitions, hardware, sensation and perception, geometric modeling, and transformation concepts.** **2. To learn axis-angle representations, quaternions, homogeneous transformations, and viewing transforms.** **3. Explore light interpretation, refraction, depth perception, motion perception, orientation tracking, and correction techniques.**				
Introduction to VR: Goals and VR Definitions - Birds-eye view - Birds-eye view Software - Bird's-eye view Hardware - Birds-eye view Sensation and Perception - Geometric modeling - Transformation- Matrices and rotation - Pitch Yaw and Roll **Axis-Angle Representations:** Quaternions - Converting and Multiplying Rotations – Homogeneous Transformations - Viewing Transforms - Eye Transforms - Canonical View Transform- Viewport Transformation **Three interpretations of light:** Refraction - Lens aberrations - Light intensity - Eye movement - Depth perception - Motion perception - Orientation tracking - Tilt Drift Correction – Yaw Drift Correction - Tracking with Camera - Perspective n-point Problem - Filtering					
Outcome	**1. Able to differentiate VR components, describe sensation and perception in VR, and apply geometric transformations and matrices for creating immersive experiences.** **2. To use axis-angle and quaternion representations for rotations, perform transformations, and apply viewing transforms for VR scenes.** **3. Able understand light interactions, depth perception mechanisms, motion perception cues, and implement orientation tracking while considering correction methods for VR experiences.**				

Reference and Text Books:

- K. S. Hale and K. M. Stanney, “Handbook on Virtual Environments", 2nd edition,CRC Press, 2015.
- Mayer R, Mayer RE, “The Cambridge handbook of multimedia learning”, Cambridge university press; 2005.
- Sadowski W, Stanney K, “Presence in virtual environments”, 2002.
- Weinersmith, K. and Weiner, Z. “Soonish: Ten Emerging Technologies That'll Improve And/orRuin Everything”, 2017.
- Weiss J, Nolan J, Hunsinger J, Trifonas P, “The international handbook of virtual learning environments”, Dordrecht, Netherlands Springer, 2006

Web Resources

- EMERGING TRENDS Virtual Reality Virtual reality

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S(3)	S(3)	S(3)	L(1)	S(3)	M(2)	M(2)	S(3)	M(2)	S(3)
CO2	S(3)	S(3)	S(3)	S(3)	S(3)	M(2)	M(2)	M(2)	M(2)	S(3)
CO3	S(3)	S(3)	S(3)	S(3)	S(3)	M(2)	L(1)	S(3)	M(2)	S(3)
CO4	S(3)	S(3)	S(3)	M(2)	S(3)	M(2)	M(2)	S(3)	M(2)	S(3)
CO5	S(3)	S(3)	S(3)	S(3)	S(3)	M(2)	M(2)	S(3)	M(2)	S(3)
W.AV	**3**	**3**	**3**	**2.4**	**3**	**2**	**1.8**	**2.8**	**2**	**3**

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S(3)	S(3)	S(3)	L(1)	L(1)
CO2	S(3)	S(3)	S(3)	L(1)	M(2)
CO3	S(3)	S(3)	S(3)	L(1)	M(2)
CO4	S(3)	S(3)	S(3)	L(1)	S(3)
CO5	S(3)	S(3)	S(3)	M(2)	S(3)
W.AV	**3**	**3**	**3**	**1.2**	**2.2**

S–Strong (3), M-Medium (2), L-Low (1)

<table>
<tr><th colspan="6">V-Semester- DSE 3</th></tr>
<tr><td>DSE 3</td><td>Course Code: 82855C</td><td>3. AR Game Design</td><td>P</td><td>Credits: 4</td><td>Hours:6</td></tr>
<tr><td>Objective</td><td colspan="5">1. To educate AR classification, image acquisition, feature extraction, matching, and verification techniques.
2. Understand IoT concepts, sensing, actuation, networking, communication protocols, and data handling.</td></tr>
<tr><td colspan="6">Introduction to AR: Classification based on Sensor, Vision and Hybrid Tracking - Image Acquisition- Feature extraction - Feature Matching - Geometric Verification - Associated Information Retrieval - Feature Extraction Techniques - SIFT - SURF
Introduction to IoT: Sensing - Actuation - Networking - Communication Protocols - SensorNetworks - Machine-to-Machine Communication - BCI - Neuro Gaming - Data HandlingandAnalytics - Sensor Cloud - Smart Grid</td></tr>
<tr><td>Outcome</td><td colspan="5">1. To classify AR tracking methods, extract features from images, match and verify features, and retrieve associated information in augmented reality contexts.
2. Explore IoT components, design sensing systems, analyze protocols, handle IoT data, and grasp IoT's impact on networks and data.</td></tr>
<tr><td colspan="6">Reference and Text Books:
● K. S. Hale and K. M. Stanney, “Handbook on Virtual Environments", 2nd edition,CRC Press, 2015.
● Mayer R, Mayer RE, “The Cambridge handbook of multimedia learning”, Cambridge university press; 2005.
● Sadowski W, Stanney K, “Presence in virtual environments”, 2002.
● Weinersmith, K. and Weiner, Z. “Soonish: Ten Emerging Technologies That'll Improve And/orRuin Everything”, 2017.
● Weiss J, Nolan J, Hunsinger J, Trifonas P, “The international handbook of virtual learning environments”, Dordrecht, Netherlands Springer, 2006</td></tr>
<tr><td colspan="6">Web Resources
● EMERGING TRENDS Virtual Reality Virtual reality</td></tr>
</table>

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S(3)	S(3)	S(3)	L(1)	S(3)	M(2)	M(2)	S(3)	M(2)	S(3)
CO2	S(3)	S(3)	S(3)	S(3)	S(3)	M(2)	M(2)	M(2)	M(2)	S(3)
CO3	S(3)	S(3)	S(3)	S(3)	S(3)	M(2)	L(1)	S(3)	M(2)	S(3)
CO4	S(3)	S(3)	S(3)	M(2)	S(3)	M(2)	M(2)	S(3)	M(2)	S(3)
CO5	S(3)	S(3)	S(3)	S(3)	S(3)	M(2)	M(2)	S(3)	M(2)	S(3)
W.AV	**3**	**3**	**3**	**2.4**	**3**	**2**	**1.8**	**2.8**	**2**	**3**

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S(3)	S(3)	S(3)	L(1)	L(1)
CO2	S(3)	S(3)	S(3)	L(1)	M(2)
CO3	S(3)	S(3)	S(3)	L(1)	M(2)
CO4	S(3)	S(3)	S(3)	L(1)	S(3)
CO5	S(3)	S(3)	S(3)	M(2)	S(3)
W.AV	**3**	**3**	**3**	**1.2**	**2.2**

S–Strong (3), M-Medium (2), L-Low (1)

V-Semester- Core					
Core	**Course Code: 82856**	**PORTFOLIO AND PRESENTATION-PRACTICAL**	**P**	**Credits: 3**	**Hours: 6**
Objectives	1. Further develop the student's ability to develop their design and presentation skills by producing a range of work. 2. Develop student's ability to critique their own work and that of their peers in a professional manner. 3. Demonstrate a range of techniques and work that the student had developed in the course of their study. 4. Give students further opportunity to demonstrate their ability to show the progression of ideas from the concept stage to completion.				
1. Create a logo and graphic signature for representing yourself. 2. Create your resume for a professional corporate company. 3. Create your blog for showing your personal development. 4. Create a Game trailer using the given gameplay footage. 5. Create your audio track to assist your demo reel. 6. Create and author a interactive portfolio using any authoring tool					
Outcomes	1. Students will demonstrate an advanced level of design and presentation skills through the production of a diverse range of work. 2. Students will engage in constructive peer critique, providing and receiving feedback in a professional and respectful manner. 3. The work produced will highlight proficiency in the application of both traditional and contemporary design techniques. 4. Students will effectively demonstrate the progression of ideas from the conceptual stage to completion in their projects. 5. The work produced will reflect an understanding of how design principles contribute to the overall effectiveness of visual communication.				

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S(3)	S(3)	S(3)	M(2)	S(3)	M(2)	S(3)	M(2)	M(2)	S(3)
CO2	S(3)	S(3)	S(3)	M(2)	S(3)	M(2)	S(3)	M(2)	M(2)	S(3)
CO3	S(3)	S(3)	S(3)	M(2)	S(3)	M(2)	S(3)	M(2)	M(2)	S(3)
CO4	S(3)	S(3)	S(3)	M(2)	S(3)	M(2)	S(3)	M(2)	M(2)	S(3)
CO5	S(3)	S(3)	S(3)	M(2)	S(3)	M(2)	S(3)	M(2)	M(2)	S(3)
W.AV	3	3	3	2	3	2	3	2	2	3

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S(3)	S(3)	S(3)	S(3)	S(3)
CO2	S(3)	S(3)	S(3)	S(3)	S(3)
CO3	S(3)	S(3)	S(3)	S(3)	S(3)
CO4	S(3)	S(3)	S(3)	S(3)	S(3)
CO5	S(3)	S(3)	S(3)	S(3)	S(3)
W.AV	3	3	3	3	3

S–Strong (3), M-Medium (2), L-Low (1)

VI – Semester-Core Course					
Core	**Course Code: 82861**	**Game Rigging Techniques**	**T**	**Credits: 4**	**Hours: 4**
Course Objectives	1. **Understand the role of rigging in games and identify the differences between character rigging and mechanical rigging.** 2. **Learn the fundamental principles of rigging, including skeleton hierarchy, constraints, and rigging tools.** 3. **Explore the components and techniques for rigging mechanical parts, such as hinges, pistons, and wheels.** 4. **Recognize the importance of rig optimization for real-time performance in game engines.** 5. **Gain proficiency in keyframe animation for mechanical parts and simple interactions.**				
Unit I	Understanding the role of rigging in game design Differentiating between character rigging and mechanical rigging Overview of performance constraints in game engines				
Unit II	Skeleton and joint hierarchy for mechanical rigs Constraints and controllers for rigging Rigging tools and software overview				
Unit III	Rigging components: hinges, pistons, wheels, etc. Creating IK (Inverse Kinematics) rigs for mechanical parts Rigging workflow for non-organic models Key frame animation for mechanical parts Rigging and animating simple interactions Setting up pivot points and animation paths				
Unit IV	Importance of optimizing rigs for real-time performance Reducing joint counts and complexity LOD (Level of Detail) for mechanical rigs Preparing rigs and animations for export Supported file formats for game engines Troubleshooting common export issues				
Unit V	Preparing rigs and animations for export Supported file formats for game engines Troubleshooting common export issues Integrating mechanical rigs into game engines Testing and iterating on rig performance Collaborating with game developers and artist				

Reference and Text Books:

1. Bracken, C., & Dennis, D. (2015). *3D Game Animation For Dummies*. Wiley
2. Hooks, A. (2011). *Character Rigging and Animation in 3ds Max*. Focal Press
3. Simon, A. (2015). *Blender Master Class: A Hands-On Guide to Modeling, Sculpting, Materials, and Rendering*. No Starch Press.

Web Resources

https://www.amazon.in/Game-Animation-Dummies-Kelly-Murdock/dp/0764587897
https://www.amazon.in/Character-Rigging-Advanced-Animation-Autodesk-ebook/dp/B07YDG1D9G
https://www.amazon.in/Blender-Master-Class-Hands-Sculpting/dp/1593274777

Course Outcome

CO1	**To grasp the importance of rigging for mechanical parts in games and recognize performance constraints in game engines.**	**K3.K4**
CO2	**Will be able to create a basic mechanical rig and understand how constraints and controllers work in rigging.**	**K2.K6**
CO3	**To create IK rigs for mechanical components and apply rigging workflows to non-organic models.**	**K3,K6**
CO4	**to learn the methods to reduce joint counts and complexity and implement LOD techniques for mechanical rigs.**	**K1,K5**
CO5	**Will be able to set up pivot points and animation paths for basic mechanical animations.**	**K2,K3**

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M(2)	L(1)	S(3)	L(1)	M(2)	L(1)	M(2)	L(1)	S(3)	S(3)
CO2	M(2)	L(1)	S(3)	L(1)	M(2)	L(1)	M(2)	L(1)	S(3)	S(3)
CO3	M(2)	L(1)	S(3)	L(1)	M(2)	L(1)	M(2)	L(1)	S(3)	S(3)
CO4	M(2)	L(1)	S(3)	L(1)	M(2)	L(1)	M(2)	L(1)	S(3)	S(3)
CO5	M(2)	L(1)	S(3)	L(1)	M(2)	L(1)	M(2)	L(1)	S(3)	S(3)
W.AV	2	1	3	1	2	1	2	1	3	3

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M(2)	M(2)	S(3)	M(2)	M(2)
CO2	M(2)	M(2)	S(3)	M(2)	M(2)
CO3	M(2)	M(2)	S(3)	M(2)	M(2)
CO4	M(2)	M(2)	S(3)	M(2)	M(2)
CO5	M(2)	M(2)	S(3)	M(2)	M(2)
W.AV	2	2	3	2	2

S–Strong (3), M-Medium (2), L-Low (1)

VI – Semester-Core Course					
Core	**Course Code: 82862**	**Real Time Game FX**	**T**	**Credits: 4**	**Hours: 4**
Course Objectives	**1. Understand the importance of real-time effects in modern game design.** **2. Familiarize students with Unreal Engine's interface and tools.** **3. Explore the physics and natural phenomena relevant to real-time effects.** **4. Learn the principles of particle systems and their application in Unreal Engine.** **5. Learn how to seamlessly integrate real-time effects into game projects.**				
Unit I	Understanding the significance of real-time effects in modern gaming, Historical perspective: evolution of real-time effects in game design ,The role of Unreal Engine in real-time effect development				
Unit II	Navigating the Unreal Engine interface and workspace, Creating and managing projects for real-time effect development, Asset creation and management in Unreal Engine				
Unit III	Applying real-world physics principles to game design Implementing basic physics simulations for in-game effects Exploring various phenomena and their applications in gaming				
Unit IV	Understanding the fundamentals of particle systems Creating and customizing particle systems in Unreal Engine Advanced techniques for particle system design				
Unit V	Integrating crafted effects into game projects Collaborative game development with real-time effects Testing, optimizing, and debugging real-time effects in Unreal Engine				

Reference and Text Books:

1. Schuytema, P., & McCaffrey, M. (2018). **Unreal Engine 4 Game Development in 24 Hours, Sams Teach Yourself**. Sams Publishing.
2. Shook, A. (2019). **Unreal Engine 4 Effects and Realtime GPU Particle Systems**. Packt Publishing.
3. Gallegos, R. (2017). **Mastering Unreal Engine 4.X**. Packt Publishing.
4. Jovanovic, M. (2019). **Unreal Engine 4 Virtual Reality Projects: Build immersive, real-world VR applications using UE4, C++, and Unreal Blueprints**. Packt Publishing.

Web Resources

https://www.packtpub.com/product/unreal-engine-4-game-development-essentials/9781784391966
https://www.amazon.in/Unreal-Engine-Virtual-Reality-Projects-ebook/dp/B07RD3MZYN
https://www.amazon.in/Unreal-Engine-Development-Hours-Yourself/dp/0672337622

Course Outcome

CO1	**Explain how real-time effects enhance gameplay and immersion.**	**K2,K3**
CO2	**Navigate Unreal Engine confidently and efficiently**	**K2,K3**
CO3	**Apply knowledge to create realistic in-game effects.**	**K1,K3**
CO4	**Create custom particle systems for various in-game effects..**	**K1,K6**
CO5	**Successfully integrate crafted effects into a game project using Unreal Engine.**	**K1,K6**

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S(3)	S(3)	S(3)	M(2)	M(2)	L(1)	M(2)	L(1)	S(3)	S(3)
CO2	S(3)	S(3)	S(3)	M(2)	M(2)	L(1)	M(2)	L(1)	S(3)	S(3)
CO3	S(3)	S(3)	S(3)	M(2)	M(2)	L(1)	M(2)	L(1)	S(3)	S(3)
CO4	S(3)	S(3)	S(3)	M(2)	M(2)	L(1)	M(2)	L(1)	S(3)	S(3)
CO5	S(3)	S(3)	S(3)	M(2)	M(2)	L(1)	M(2)	L(1)	S(3)	S(3)
W.AV	3	3	3	2	2	1	2	1	3	3

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S(3)	S(3)	S(3)	M(2)	S(3)
CO2	S(3)	S(3)	S(3)	M(2)	S(3)
CO3	S(3)	S(3)	S(3)	M(2)	S(3)
CO4	S(3)	S(3)	S(3)	M(2)	S(3)
CO5	S(3)	S(3)	S(3)	M(2)	S(3)
W.AV	3	3	3	2	3

S–Strong (3), M-Medium (2), L-Low (1)

VI-Semester- Core Course					
Core	**Course Code: 82863**	**Game Rigging Techniques -Practical**	**P**	**Credits: 4**	**Hours:6**
Objective	**1. To develop expertise in the skeletal system, joint creation and placement, bone hierarchy, naming conventions, and skeleton optimization techniques.** **2. To master character skinning techniques in 3D modeling and animation.** **3. To become proficient in creating expressive facial animations and character deformations through advanced techniques.** **4. To master the concepts of Inverse Kinematics (IK) and Forward Kinematics (FK), including setting up IK/FK switches, solving complex IK challenges, and effectively animating using both techniques.** **5. To develop proficiency in rigging non-character elements, including props and vehicles, using constraint-based and physics-based techniques, and creating interactive rigs for game objects.**				
1. In-depth study of skeletal systems Joint creation and placement Bone hierarchy and naming conventions Skeleton optimization techniques 2. Weight painting fundamentals Skin deformation methods Advanced skinning techniques (smooth binding, rigid binding etc.) Troubleshooting common skinning issues 3. Creating facial expressions and character deformations Blend shape setup and usage Managing morph target libraries Advanced facial rigging 4. Understanding IK and FK Setting up IK/FK switches Solving complex IK challenges Animating with IK/FK 5. Rigging non-character elements (props, vehicles, etc.) Constraint-based rigging for objects Physics-based rigging for vehicles Interactive rigging for game objects					
Outcome	1. **Acquires advanced knowledge and skills in these areas, enabling them to create accurate, well-structured skeletal models for diverse applications.** **2. Be able to skillfully weight paint characters, apply various skin deformation methods, employ advanced skinning techniques like smooth and rigid binding, and effectively troubleshoot common skinning issues** **3. Acquired the skills to create a wide range of facial expressions, set up and effectively use blend shapes, manage morph target libraries, and implement advanced facial rigging methods.** **4. Acquires a comprehensive understanding of IK and FK, be able to seamlessly set up IK/FK switches in character rigs, tackle complex IK problems, and create fluid animations that leverage the strengths of both IK and FK** **5. Able to rig a variety of non-character elements, such as props and vehicles, using constraint-based and physics-based methods. also able to design interactive rigs for game objects, enabling dynamic interactions in virtual environments.**				

Reference and Text Books:

1. Bracken, C., & Dennis, D. (2015). *3D Game Animation For Dummies*. Wiley
2. Hooks, A. (2011). *Character Rigging and Animation in 3ds Max*. Focal Press
3. Simon, A. (2015). *Blender Master Class: A Hands-On Guide to Modeling, Sculpting, Materials, and Rendering*. No Starch Press..

Web Resources

https://www.amazon.in/Game-Animation-Dummies-Kelly-Murdock/dp/0764587897
https://www.amazon.in/Character-Rigging-Advanced-Animation-Autodesk-ebook/dp/B07YDG1D9G
https://www.amazon.in/Blender-Master-Class-Hands-Sculpting/dp/1593274777

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M(2)	L(1)	S(3)	L(1)	M(2)	L(1)	M(2)	L(1)	S(3)	S(3)
CO2	M(2)	L(1)	S(3)	L(1)	M(2)	L(1)	M(2)	L(1)	S(3)	S(3)
CO3	M(2)	L(1)	S(3)	L(1)	M(2)	L(1)	M(2)	L(1)	S(3)	S(3)
CO4	M(2)	L(1)	S(3)	L(1)	M(2)	L(1)	M(2)	L(1)	S(3)	S(3)
CO5	M(2)	L(1)	S(3)	L(1)	M(2)	L(1)	M(2)	L(1)	S(3)	S(3)
W.AV	2	1	3	1	2	1	2	1	3	3

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M(2)	M(2)	S(3)	M(2)	M(2)
CO2	M(2)	M(2)	S(3)	M(2)	M(2)
CO3	M(2)	M(2)	S(3)	M(2)	M(2)
CO4	M(2)	M(2)	S(3)	M(2)	M(2)
CO5	M(2)	M(2)	S(3)	M(2)	M(2)
W.AV	2	2	3	2	2

S–Strong (3), M-Medium (2), L-Low (1)

VI-Semester- DSE 4					
DSE 4	**Course Code: 82864A**	**1.Visual Scripting**	**P**	**Credits: 4**	**Hours:4**

Objective

1. Introduce the basics of visual scripting in game development.
2. Enable students to implement player controls, camera systems, and interactive elements.
3. Develop proficiency in advanced concepts, including custom functions and debugging techniques.
4. Facilitate hands-on projects for practical application and portfolio development.

Introduction to Visual Scripting

- Understanding the Basics of Programming Logic
- Overview of Visual Scripting in Game Development
- Comparison with Traditional Coding Approaches
- Introduction to Common Visual Scripting Environments (e.g., Blueprints in Unreal Engine, Visual Scripting in Unity)

Visual Scripting Fundamentals

- Nodes and Graphs: Building Blocks of Visual Scripts
- Variables and Data Types in Visual Scripting
- Control Flow: Executions, Conditions, and Loops
- Functions and Events in Visual Scripting Environments

Game Mechanics with Visual Scripting

- Implementing Player Controls and Camera Systems
- Creating Interactive Objects and Events
- Handling User Input and UI Interactions
- Basic Gameplay Mechanics using Visual Scripting

Advanced Visual Scripting Concepts

- Custom Functions and Macros
- Variable Scope and Data Manipulation
- Object-Oriented Programming (OOP) Principles in Visual Scripting
- Debugging Techniques for Visual Scripts

Cinematics and Cutscene Scripting

- Scripting for Cutscenes and Cinematics
- Camera Animation and Sequencing
- Dialogues and Character Animations in Visual Scripting
- Dynamic Storytelling through Visual Scripting

Outcome

1. Demonstrate a solid grasp of fundamental visual scripting concepts.
2. Successfully apply visual scripting to create basic gameplay mechanics.
3. Showcase proficiency in advanced visual scripting techniques.
4. Apply visual scripting skills in practical projects, building a portfolio for future endeavors.

Reference and Text Books:

Schell, J. (2008). *The Art of Game Design: A Book of Lenses.* CRC Press.
Salen, K., & Zimmerman, E. (2003). *Rules of Play: Game Design Fundamentals.* The MIT Press.
Fullerton, T. (2008). *Game Design Workshop: A Playcentric Approach to Creating Innovative Games.* CRC Press.
Dille, F., & Zuur Platten, J. (2007). *The Ultimate Guide to Video Game Writing and Design.* Lone Eagle Publishing.

Web Resources

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S(3)	S(3)	S(3)	L(1)	S(3)	M(2)	M(2)	S(3)	M(2)	S(3)
CO2	S(3)	S(3)	S(3)	S(3)	S(3)	M(2)	M(2)	M(2)	M(2)	S(3)
CO3	S(3)	S(3)	S(3)	S(3)	S(3)	M(2)	L(1)	S(3)	M(2)	S(3)
CO4	S(3)	S(3)	S(3)	M(2)	S(3)	M(2)	M(2)	S(3)	M(2)	S(3)
CO5	S(3)	S(3)	S(3)	S(3)	S(3)	M(2)	M(2)	S(3)	M(2)	S(3)
W.AV	**3**	**3**	**3**	**2.4**	**3**	**2**	**1.8**	**2.8**	**2**	**3**

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S(3)	S(3)	S(3)	L(1)	L(1)
CO2	S(3)	S(3)	S(3)	L(1)	M(2)
CO3	S(3)	S(3)	S(3)	L(1)	M(2)
CO4	S(3)	S(3)	S(3)	L(1)	S(3)
CO5	S(3)	S(3)	S(3)	M(2)	S(3)
W.AV	**3**	**3**	**3**	**1.2**	**2.2**

S–Strong (3), M-Medium (2), L-Low (1)

VI-Semester- DSE 4					
DSE 4	**Course Code: 82864B**	**2. Game Sound Design / SFX**	**P**	**Credits: 4**	**Hours:4**
Objective	**1. Understand the significance of sound design in gaming and its impact on player experience.** **2. Develop skills in recording and editing sound to create polished audio assets.** **3. Learn how to create dynamic and interactive audio experiences using scripting.** **4. Gain proficiency in integrating spatial audio techniques for realistic in-game soundscapes.** **5. Understand how sound can convey emotions and contribute to storytelling in games.**				
Introduction to Sound Design for Games: Role and importance of sound in game development - Elements: music, effects, ambient sounds, voiceovers - Sound's psychological impact on player immersion - Introduction to audio tools in game development - Hands-on: Setup audio environment, basic integration. **Sound Recording and Editing:**Basics of sound recording: microphones, techniques - Introduction to digital audio workstations (DAWs)- Cleaning, editing: noise reduction, equalization - Layering, mixing for depth and richness - Hands-on: Record, edit sounds for a simple game scene. **Interactive Audio and Implementation:**Create adaptive soundscapes based on player actions - Integrate audio events for in-game interactions - Introduction to audio scripting languages for interaction - Dynamic music systems that react to gameplay - Hands-on: Implement interactive audio with scripting. **Spatial Audio and 3D Sound:** Understand spatial audio: binaural, 3D positioning - Simulate distance, direction, environmental effects - Use audio middleware for spatial audio - Design sound scapes to enhance immersion - Hands-on: Integrate spatial audio into game levels. **Emotional Impact and Storytelling through Sound:** Explore sound's emotional impact in games - Convey narrative, atmosphere, emotions through audio - Collaborate with other disciplines for storytelling - Case studies of games with exceptional sound design.				
Outcome	1. **Able to articulate the importance of sound in games and describe its role in enhancing player immersion.** **2. Able to record and edit sound using digital audio workstations (DAWs) to produce high-quality audio assets for games.** **3. Implement interactive audio elements in games using scripting languages to enhance gameplay immersion.** **4. Integrate spatial audio into game environments, creating a sense of depth and directionality in sound.** **5. Design soundscapes that evoke emotions and enhance narrative elements, showcasing the storytelling potential of sound.**				
Reference and Text Books: ● "The Essential Guide to Game Audio: The Theory and Practice of Sound for Games" by Steve Horowitz and Scott Looney- UNIT-I ● "The Sound Effects Bible: How to Create and Record Hollywood Style Sound Effects" by Ric Viers- UNIT-II ● "Game Audio Programming: Principles and Practices" by James Boer - UNIT-III ● "3D Audio Programming: Theories and Practices" by Ravish Mehra and Jyoti Narang - UNIT-IV ● "Music, Sound and Story in Film and Media" by Kathryn Kalinak - UNIT-V					
Web Resources ● https://www.gamedesigning.org/learn/video-game-sound/					

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S(3)	S(3)	S(3)	L(1)	S(3)	M(2)	M(2)	S(3)	M(2)	S(3)
CO2	S(3)	S(3)	S(3)	S(3)	S(3)	M(2)	M(2)	M(2)	M(2)	S(3)
CO3	S(3)	S(3)	S(3)	S(3)	S(3)	M(2)	L(1)	S(3)	M(2)	S(3)
CO4	S(3)	S(3)	S(3)	M(2)	S(3)	M(2)	M(2)	S(3)	M(2)	S(3)
CO5	S(3)	S(3)	S(3)	S(3)	S(3)	M(2)	M(2)	S(3)	M(2)	S(3)
W.AV	**3**	**3**	**3**	**2.4**	**3**	**2**	**1.8**	**2.8**	**2**	**3**

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S(3)	S(3)	S(3)	L(1)	L(1)
CO2	S(3)	S(3)	S(3)	L(1)	M(2)
CO3	S(3)	S(3)	S(3)	L(1)	M(2)
CO4	S(3)	S(3)	S(3)	L(1)	S(3)
CO5	S(3)	S(3)	S(3)	M(2)	S(3)
W.AV	**3**	**3**	**3**	**1.2**	**2.2**

S–Strong (3), M-Medium (2), L-Low (1)

<table>
<tr><th colspan="6">VI-Semester- DSE 4</th></tr>
<tr><td>DSE 4</td><td>Course Code: 82864C</td><td>3. Game Cinematics</td><td>P</td><td>Credits: 4</td><td>Hours:4</td></tr>
<tr><td>Objective</td><td colspan="5">1. Understand the foundational elements of cinematic design in games, including camera movements, animations, dialogue, and environmental cues.
2. Apply interactive narrative techniques by developing dialogue systems that allow players to make choices influencing the outcomes of cinematic sequences.
3. Demonstrate the ability to design and implement dynamic camera systems that automatically follow characters during gameplay to enhance storytelling and immersion.
4. Create game environments enriched with visual cues and elements that communicate narrative context, creating a more immersive and engaging storytelling experience.
5. Develop the skills to craft time-lapse cinematics depicting the passage of time or implementing triggered cinematics that respond to specific in-game conditions, effectively enhancing narrative and player engagement.</td></tr>
<tr><td colspan="6">1. Cinematic Cutscene: Create a cinematic cutscene that introduces a game's story or characters using camera movements, animations, and dialogue.
2. Narrative Puzzles: Create puzzle-based cinematics where players must solve challenges in the environment to advance the cinematic story.
3. Dynamic Camera Sequences: Design a dynamic camera system that follows characters during gameplay, enhancing immersion and storytelling.
4. Environmental Storytelling: Construct an environment with visual cues and elements that convey a narrative without relying on direct dialogue or exposition.
5. Time-Lapse Sequences: Craft time-lapse cinematics that showcase the passage of time, such as day-night cycles or the growth of a structure.
6. Endings and Epilogues: Design impactful cinematics that provide closure to the game's story, offering players a satisfying conclusion.</td></tr>
<tr><td>Outcome</td><td colspan="5">1. To demonstrate proficiency in designing and creating cinematic cutscenes, incorporating camera movements, animations, and dialogue to effectively convey the game's story and characters.
2. To develop the ability to design and implement interactive dialogue systems that allow players to make choices influencing the outcomes of cinematic sequences, enhancing player engagement and immersion.
3. Gain the skill to design and apply dynamic camera systems that automatically follow characters during gameplay, contributing to a more immersive and visually engaging player experience.
4. To construct game environments with visual cues and elements that convey narrative context without relying on direct exposition, contributing to a richer and more immersive storytelling experience.
5. Develop the capability to craft time-lapse cinematics showcasing the passage of time or triggering scripted events in response to specific in-game conditions, enhancing storytelling and player engagement</td></tr>
<tr><td colspan="6">Reference and Text Books:
1. Newman, R. (2008). Cinematic Game Secrets for Creative Directors and Producers: Inspired Techniques From Industry Legends. Focal Press.
2. Hart, J. (2013). The Art of the Storyboard: A Filmmaker's Introduction. Focal Press.
3. Truby, J. (2007). The Anatomy of Story: 22 Steps to Becoming a Master Storyteller. Faber & Faber.</td></tr>
</table>

Web Resources

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S(3)	S(3)	S(3)	M(2)	M(2)	M(2)	M(2)	M(2)	M(2)	S(3)
CO2	S(3)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)	M(2)	S(3)	S(3)
CO3	S(3)	S(3)	S(3)	M(2)	M(2)	M(2)	S(3)	M(2)	M(2)	M(2)
CO4	S(3)	S(3)	S(3)	M(2)	M(2)	L(1)	M(2)	S(3)	M(2)	M(2)
CO5	S(3)	S(3)	S(3)	S(3)	M(2)	M(2)	M(2)	M(2)	S(3)	S(3)
W.AV	**3**	**3**	**3**	**2.2**	**2.2**	**2**	**2.2**	**2.2**	**2.4**	**2.6**

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S(3)	S(3)	S(3)	M(2)	M(2)
CO2	S(3)	S(3)	S(3)	M(2)	S(3)
CO3	S(3)	S(3)	S(3)	M(2)	M(2)
CO4	S(3)	S(3)	M(2)	S(3)	M(2)
CO5	S(3)	S(3)	M(2)	M(2)	S(3)
W.AV	**3**	**3**	**2.6**	**2.2**	**2.4**

S–Strong (3), M-Medium (2), L-Low (1)

VI-Semester- Core					
Core	**Course Code: 82865A/ 82865B**	**PROJECT/ DISSERTATION**	PR/ D	**Credits: 6**	**Hours: 12**
Objectives	➢ **Develop a comprehensive and functional game prototype that demonstrates mastery of chosen programming languages and tools.** ➢ **Apply theoretical knowledge to address practical challenges within game development, showcasing problem-solving abilities.** ➢ **Demonstrate creativity and innovation in designing gameplay mechanics or features that exhibit a deep understanding of gaming concepts.** ➢ **Create a cohesive documentation outlining the development process, decision-making rationale, and technical aspects of the project.** ➢ **Present and defend the project's technical aspects and design choices through a well-structured dissertation or presentation.**				
Outcomes	➢ **Students will demonstrate a high level of proficiency in game development, showcasing skills in programming, game design, and implementation.** ➢ **Acquiring the ability to analyze complex problems within game development and devise effective solutions, displaying critical thinking and problem-solving capabilities.** ➢ **Demonstrating creativity in applying theoretical knowledge to create innovative gameplay mechanics, features, or visual elements.** ➢ **Producing comprehensive documentation that details the project's development process, methodologies used, challenges faced, and solutions implemented.** ➢ **Improved abilities to communicate technical concepts effectively, both in writing (documentation) and orally (presentations), fostering clearer articulation of ideas and technical decisions.** ➢ **Developing skills in project management, including time management, task prioritization, and resource allocation to successfully complete a substantial project within a specified timeline.** ➢ **Gaining familiarity with industry standards and best practices in game development, preparing students for potential careers in the field.** ➢ **Instilling confidence in their abilities to independently conceptualize, plan, execute, and present a significant project within the realm of game programming.**				

AIM OF THE PROJECT WORK

1. The aim of the project work is to acquire practical knowledge on the implementation of the programming concepts studied.
2. Each student should carry out individually one project work and it may be a work using the software packages that they have learned or the implementation of concepts from the papers studied or implementation of any innovative idea focusing on application oriented concepts.
3. The project work should be compulsorily done in the college only under the supervision of the department staff concerned.

VivaVoce

1. Viva-Voce will be conducted at the end of the year by both Internal (Respective Guides) and External Examiners, after duly verifying the Annexure Report available in the College, for a total of 100 marks at the last day of the practical session.
2. Out of 100 marks, 25 marks for CIA and 75 for CEE (50 evaluation of project report + 25 Viva Voce).

Project Report Format

PROJECT WORK

TITLE OF THE DISSERTATION

Bonafide Work Done by

STUDENT NAME

REG. NO.

GUIDE NAME

Dissertation submitted in partial fulfillment of the requirements for the award of

<Name of the Degree>

ICAT Design and Media College, Chennai.

College Logo

Signature of the Guide Signature of the HOD

Submitted for the Viva-Voce Examination held on_____

Internal Examiner External Examiner

Month – Year

University Logo

CONTENTS

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S(3)	S(3)	M(2)	M(2)	M(2)	M(2)	M(2)	M(2)	M(2)	L(1)
CO2	M(2)	M(2)	M(2)	M(2)	S(3)	S(3)	M(2)	M(2)	S(3)	S(3)
CO3	M(2)	S(3)	S(3)	M(2)	M(2)	M(2)	S(3)	M(2)	M(2)	M(2)
CO4	S(3)	M(2)	M(2)	M(2)	M(2)	L(1)	M(2)	S(3)	M(2)	M(2)
CO5	M(2)	S(3)	S(3)	S(3)	M(2)	M(2)	M(2)	M(2)	S(3)	S(3)
W.AV	**2.4**	**2.6**	**2.4**	**2.2**	**2.2**	**2**	**2.2**	**2.2**	**2.4**	**2**

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S(3)	S(3)	S(3)	M(2)	M(2)
CO2	M(2)	M(2)	S(3)	M(2)	S(3)
CO3	M(2)	S(3)	S(3)	M(2)	M(2)
CO4	S(3)	M(2)	M(2)	S(3)	M(2)
CO5	M(2)	S(3)	M(2)	M(2)	S(3)
W.AV	**2.4**	**2.6**	**2.6**	**2.2**	**2.4**

S–Strong (3), M-Medium (2), L-Low (1)

UG Programme

Passing minimum

- A candidate shall be declared to have passed in each course if he/she secures not less than 40% marks in the End Semester Examinations and 40% marks in the Internal Assessment and not less than 40% in the aggregate, taking Continuous assessment and End Semester Examinations marks together.
- The passing minimum for CIA shall be 40% out of 25 marks (i.e.10 marks) in Theory/ Practical Examinations.
- The passing minimum for University Examinations shall be 40% out of 75 marks (i.e. 30 marks) for Theory /Practical papers.
- The candidates not obtain 40% in the Internal Assessment are permitted to improve their Internal Assessment marks in the subsequent semesters (2 chances will be given) by writing the CIA tests or by submitting assignments.
- Candidates, who have secured the pass marks in the End-Semester Examination and in the CIA but failed to secure the aggregate minimum pass mark (E.S.E + C I.A), are permitted to improve their Internal Assessment mark in the following semester and/or in University examinations.
- A candidate shall be declared to have passed in the Dissertation/Project report/Internship report if he/she gets not less than 40% marks in the Internal Assessment and End Semester Examinations and not less than 40% in the aggregate, taking Continuous assessment and End Semester Examinations marks together.
- A candidate who gets less than 40% in the Dissertation / Internship/ Project Report must resubmit the thesis. Such candidates need to take again the Viva-Voce on the resubmitted report/thesis.

18.2 Grading of the Courses

The following table gives the marks, Grade points, Letter Grades, and classifications meant to indicate the overall academic performance of the candidate.

Conversion of Marks to Grade Points and Letter Grade (Performance in Course / Paper)

RANGE OF MARKS	GRADE POINTS	LETTER GRADE	SCRIPTION
- 100	**9.0 – 10.0**	**O**	**tstanding**
- 89	**8.0 – 8.9**	**D+**	**cellent**
- 79	**7.5 – 7.9**	**D**	**tinction**
- 74	**7.0 – 7.4**	**A+**	**y Good**
- 69	**6.0 – 6.9**	**A**	**od**
- 59	**5.0 – 5.9**	**B**	**erage**

- 49	**4.0 – 4.9**	**C**	**isfactory**
- 39	**0.0**	**U**	**appear**
SENT	**0.0**	**AAA**	**SENT**

a) Successful candidates passing the examinations and earning a GPA between 9.0 and 10.0 and marks from 90 – 100 shall be declared to have Outstanding (O).

b) Successful candidates passing the examinations and earning GPA between 8.0 and 8.9 and marks from 80 - 89 shall be declared to have Excellent (D+).

c) Successful candidates passing the examinations and earning GPA between 7.5 – 7.9 and marks from 75 - 79 shall be declared to have Distinction (D).

d) Successful candidates passing the examinations and earning GPA between 7.0 – 7.4 and marks from 70 - 74 shall be declared to have Very Good (A+).

e) Successful candidates passing the examinations and earning GPA between 6.0 – 6.9 and marks from 60 - 69 shall be declared to have Good (A).

f) Successful candidates passing the examinations and earning GPA between 5.0 – 5.9 and marks from 50 - 59 shall be declared to have Average (B).

g) Successful candidates passing the examinations and earning GPA between 4.0 – 4.9 and marks from 40 - 49 shall be declared to have Satisfactory (C).

h) Candidates earning GPA between 0.0 and marks from 00 - 39 shall be declared to have Re-appear (U).

i) Absence from an examination shall not be taken as an attempt.

From the second semester onwards the total performance within a semester and continuous performance starting from the first semester are indicated respectively **by** Grade Point Average (GPA) and Cumulative Grade Point Average (CGPA).

These two are calculated by the following formulate

GRADE POINT AVERAGE (GPA) = $\Sigma_i C_i \; G_i / \Sigma_i C_i$

GPA = Sum of the multiplication of grade points by the credits of the courses

Sum of the credits of the courses in a Semester

18.3 Classification of the final result

The final result of the candidate shall be based only on the CGPA earned by the candidate.

a) Successful candidates passing the examinations and earning CGPA between 9.5 and 10.0 shall be given Letter Grade (O+) and those who earned CGPA between 9.0 and 9.4 shall be given Letter Grade (O) and declared to have First Class –Exemplary*.

b) Successful candidates passing the examinations and earning CGPA between 7.5 and 7.9 shall be given Letter Grade (D), those who earned CGPA between 8.0 and 8.4 shall be given Letter Grade (D+) and

those who earned CGPA between 8.5 and 8.9 shall be given Letter Grade (D++) and declared to have First Class with Distinction*.

c) Successful candidates passing the examinations and earning CGPA between 6.0 and 6.4 shall be given Letter Grade (A), those who earned CGPA between 6.5 and 6.9 shall be given Letter Grade (A+), and those who earned CGPA between 7.0 and 7.4 shall be given Letter Grade (A++) and declared to have First Class.

d) Successful candidates passing the examinations and earning CGPA between 5.0 and 5.4 shall be given Letter Grade (B) and those who earned CGPA between 5.5 and 5.9 shall be given Letter Grade (B+) and declared to have passed in the Second Class.

e) Successful candidates passing the examinations and earning CGPA between 4.0 and 4.4 shall be given Letter Grade (C) and those who earned CGPA between 4.5 and 4.9 shall be given Letter Grade (C+) and declared to have passed in the Third Class.

f) Absence from an examination shall not be taken as an attempt.

Final Result

CGPA	Grade	Classification of Final Result
9.5 – 10.0 9.0 and above but below 9.5	**O+** **O**	First Class – Exemplary*
8.5 and above but below 9.0 8.0 and above but below 8.5 7.5 and above but below 8.0	**D++** **D+** **D**	First Class with Distinction*
7.0 and above but below 7.5 6.5 and above but below 7.0 6.0 and above but below 6.5	**A++** **A+** **A**	First Class
5.5 and above but below 6.0 5.0 and above but below 5.5	**B+** **B**	Second Class
4.5 and above but below 5.0 4.0 and above but below 4.5	**C+** **C**	Third Class
0.0 and above but below 4.0	**U**	Re-appear

CUMULATIVE GRADE POINT AVERAGE (CGPA) = $\Sigma_n \Sigma_i C_{ni} G_{ni} / \Sigma_n \Sigma_i C_{ni}$

CGPA = Sum of the multiplication of grade points by the credits of the entire programme

Sum of the credits of the course for the entire Programme

Where '**Ci**' is the Credit earned for Course i in any semester; '**Gi**' is the Grade Point obtained by the student for Course i and 'n' refers to the semester in which such courses were credited.

CGPA (Cumulative Grade Point Average) = Average Grade Point of all the Courses passed starting from the first semester to the current semester.

Note: * The candidates who have passed in the first appearance and within the prescribed Semesters of the UG Programme (Major, Allied, and Elective courses alone) are eligible for this classification.