# B.Sc. Game Art and Design

## Apprenticeship Embedded Degree Programme
## (3 Years)

By:
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# Chapter 1
# General Course Structure
# &
# Credit Distribution

**Definition of Credit**

| | |
|---|---|
| 1 Hr. Lecture (L) per week | 1 credit |
| 1 Hr. Tutorial (T) per week | 1 credit |
| 1 Hr. Practical (P) per week | 0.5 credit |
| 2 Hr. Practical (P) per week | 1 credit |

**A. Range of Credits:**

In the light of the fact that a typical Model Four-year AEDP in Media and Entertainment Skills has about 160 credits, the total number of credits proposed for the three-year program in Media and Entertainment Skills is 120.

**B. Structure of AEDP (3 Year) in Media and Entertainment Skills:**

The structure of the program in Media and Entertainment Skills shall have essentially the following categories of courses with the breakup of credits as given:

| Sr. No. | Category | Suggested Breakup of Credits |
|---|---|---|
| 1 | Program Core courses (Branch specific) | 83* |
| 2 | Open Elective courses (from other technical and /or emerging subjects) | 8* |
| 3 | Vocational (Minor), Project work, seminar, and internship in industry or elsewhere | 12* |
| 4 | CO-Curricular Courses [Environmental Sciences, Induction training, Indian Constitution, Essence of Indian Traditional Knowledge etc.] | 10* |

| | | |
|---|---|---|
| 5 | Apprenticeship with Industry | 26* |
| | **Total** | **139*** |

*Minor variation is allowed as per need of the respective disciplines.

## C. Course code and definition:

| Course code | Definitions |
|---|---|
| L | Lecture |
| T | Tutorial |
| P | Practical |
| PC | Program Core Courses |
| OE | Open Elective Courses |
| PR | Project |

### D. Course level coding scheme:

Three-digit number (odd numbers are for the odd semester courses and even numbers are for even semester courses) used as suffix with the Course Code for identifying the level of the course e.g.
101, 102 … etc. for first semester 201, 202 …. Etc. for second semester 301, 302 … for third semester.

### E. Category-wise Courses

## PROGRAM CORE COURSES [PC]

**Note:**
(i) Number of Program Core Courses: 30 (including lab courses)
(ii) Credits: 83

| Sl. No | Code No. | Course Title | Hours per week | Semester | Credits |
|---|---|---|---|---|---|

| | | | L | T | P | | |
|---|---|---|---|---|---|---|---|
| 1 | DGA101 | Communicative English-I | 1 | 0 | 2 | 1 | 2 |
| 2 | DGA102 | Drawing & Painting | 1 | 1 | 0 | 1 | 2 |
| 3 | DGA103 | Storytelling & Storyboarding | 0 | 2 | 0 | 1 | 2 |
| 4 | DGA104 | Principles of Animation | 1 | 1 | 2 | 1 | 3 |
| 5 | DGA105 | Digital Art | 1 | 2 | 2 | 1 | 4 |
| 6 | DGA106 | UI UX Design | 1 | 2 | 0 | 1 | 3 |
| 7 | DGA201 | Communicative English-II | 1 | 0 | 2 | 2 | 2 |
| 8 | DGA202 | Level Design For Games | 1 | 2 | 0 | 2 | 3 |
| 9 | DGA203 | 2D Game Design | 1 | 2 | 2 | 2 | 4 |
| 10 | DGA204 | Pre-Production | 1 | 2 | 0 | 2 | 3 |
| 11 | DGA205 | Programming in C# | 1 | 1 | 0 | 2 | 2 |
| 12 | DGA206 | History of Gaming | 2 | 0 | 0 | 2 | 2 |
| 13 | DGA301 | UI/UX for Games Design | 1 | 2 | 0 | 3 | 3 |
| 14 | DGA302 | 3D Game Art Production Techniques - I | 1 | 1 | 2 | 3 | 3 |
| 15 | DGA303 | Digital Sculpting Techniques | 1 | 2 | 2 | 3 | 4 |
| 16 | DGA304 | Game Engine fundamentals - I | 1 | 2 | 2 | 3 | 4 |
| 17 | DGA305 | Story Telling for Games | 1 | 1 | 0 | 3 | 2 |
| 18 | DGA401 | Game Psychology & Research | 2 | 0 | 0 | 4 | 2 |
| 19 | DGA402 | 3D Game Art Production Techniques - II | 1 | 2 | 0 | 4 | 3 |
| 20 | DGA403 | Mobile Game art & Design | 1 | 1 | 0 | 4 | 2 |
| 21 | DGA404 | Game Engine fundamentals - II | 1 | 2 | 0 | 4 | 3 |
| 22 | DGA405 | Game Audio foundations | 1 | 1 | 0 | 4 | 2 |
| 23 | DGA406 | JavaScript Programming | 1 | 1 | 0 | 4 | 2 |
| 24 | DGA407 | Community Connect | 0 | 2 | 0 | 4 | 2 |
| 25 | DGA501 | Fundamentals of Web design and development | 1 | 2 | 0 | 5 | 3 |
| 26 | DGA502 | Game Architecture and Hardware | 1 | 2 | 2 | 5 | 4 |
| 27 | DGA503 | World Level Design Techniques - I | 1 | 1 | 2 | 5 | 3 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 28 | DGA504 | Building AR based Games | 1 | 1 | 2 | 5 | 3 |
| 29 | DGA505 | Android Game Development | 1 | 2 | 0 | 5 | 3 |
| 30 | DGA506 | Real time Graphics, shaders and effects | 1 | 2 | 0 | 5 | 3 |
| **Total Credits** | | | | | | | 83 |

** The branch code, e.g. ADMC for Content and Creative Writing
### Three-digit number for identifying the level of the course

## OPEN ELECTIVE COURSES [OE]

**Note:**
(i) Number of Open Elective Courses: 13
(ii) Credits: 30
(iii) The Open Elective Courses to be offered in all semesters.
(iv) The students can opt for any open elective courses that are offered by any of the respective departments.

| Sl. No | Code No. | Course Title | Hours per week | | | Semester | Credits |
|---|---|---|---|---|---|---|---|
| | | | L | T | P | | |
| 1 | OE | Open Elective (To be Chosen by Student) | 0 | 2 | 0 | 1 | 2 |
| 2 | | Vocational (Minor) | 0 | 2 | 2 | 1 | 3 |
| 3 | | Co-Curricular | 0 | 2 | 0 | 1 | 2 |
| 4 | | Open Elective (To be Chosen by Student) | 0 | 2 | 0 | 2 | 2 |
| 5 | | Vocational (Minor) | 0 | 2 | 2 | 2 | 3 |
| 6 | | Co-Curricular | 0 | 2 | 0 | 2 | 2 |
| 7 | | Open Elective (To be Chosen by Student) | 0 | 2 | 0 | 3 | 2 |
| 8 | | Vocational (Minor) | 0 | 2 | 2 | 3 | 3 |
| 9 | | Co-Curricular | 0 | 2 | 0 | 3 | 2 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 10 | | Open Elective (To be Chosen by Student) | 0 | 2 | 0 | 4 | 2 |
| 11 | | Vocational (Minor) | 0 | 2 | 2 | 4 | 3 |
| 12 | | Co-Curricular | 0 | 2 | 0 | 4 | 2 |
| 13 | | Co-Curricular | 0 | 2 | 0 | 5 | 2 |
| **Total Credits** | | | | | | | 30 |

** The branch code, e.g. ADMC for Media Communication
### Three-digit number for identifying the level of the course

## PROJECT WORK AND INTERNSHIP IN INDUSTRY OR ELSEWHERE

| Sl. No | Code No. | Course Title | Hours per week | | | Semester | Credits |
|---|---|---|---|---|---|---|---|
| | | | L | T | P | | |
| 1 | | **Live Project I (Industry Tie-up)** | 0 | 0 | 0 | 2 | 0 |
| 2 | | **Live Project II (Industry Tie-up)** | 0 | 0 | 0 | 4 | 0 |
| 3 | | Project (Web and AR) | 0 | 1 | 4 | 5 | 3 |
| **Total Credits** | | | | | | | 3 |

**Note:**

- Projects can be taken at an industry or also at the institution premises.
- Live projects can also be taken into account when considering internship

## INDUCTION PROGRAM

| Induction program (suggested) | Two-week duration |
|---|---|
| Induction program for students to be offered right at the start of the first YEAR. | • Physical activity<br>• Creative Arts<br>• Universal Human Values<br>• Literary<br>• Proficiency Modules<br>• Lectures by Eminent People<br>• Visits to local Areas<br>• Familiarization to Dept./Branch & Innovations |

**F. Visits/Workshop/Expert Lectures:**

a. It is advised to arrange one industrial visit every semester for the students of each branch.

b. It is advised to organize at least one expert lecture per semester for each branch by inviting resource persons from domain specific industry.

**G. Evaluation Scheme (Suggestive only):**

**a. For Theory Courses:**

(The weightage of Internal assessment is 40% and for End Semester Exam is 60%) The student has to obtain at least 40% marks individually both in internal assessment and end semester exams to pass.

**b. For Practical Courses:**

(The weightage of Internal assessment is 60% and for End Semester Exam is 40%) The student has to obtain at least 40% marks individually both in internal assessment and end semester exams to pass.

**c. For Internship / Projects / Seminar etc.**

Evaluation is based on work done, quality of report, performance in viva-voce, presentation etc.

**Note:** The internal assessment is based on the student's performance in mid semester tests (two best out of three), quizzes, assignments, class performance, attendance, viva-voce in practical, lab record etc.

**H. Mapping of Marks to Grades**

Each course (Theory/Practical) is to be assigned 100 marks, irrespective of the number of credits, and the mapping of marks to grades may be done as per the following table:

| Range of Marks | Assigned Grade |
|---|---|
| 91-100 | AA/A+ |
| 81-90 | AB/A |
| 71-80 | BB/B+ |
| 61-70 | BC/B |
| 51-60 | CC/C+ |
| 46-50 | CD/C |
| 40-45 | DD/D |
| **< 40** | FF/F (Fail due to less marks) |
| - | FR (Fail due to shortage of attendance and therefore, to repeat the course) |

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# CHAPTER 2
# FIRST YEAR CURRICULUM STRUCTURE

| Semester 1 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sl. No. | Category of Course | Code No. | Course Title | Hours per week | | | Total Contact hrs/week | Credits |
| | | | | L | T | P | | |
| 1 | PC | DGA101 | Communicative English-I | 1 | 0 | 2 | 3 | 2 |
| 2 | PC | DGA102 | Drawing & Painting | 1 | 1 | 0 | 2 | 2 |
| 3 | PC | DGA103 | Storytelling & Storyboarding | 0 | 2 | 0 | 2 | 2 |
| 4 | PC | DGA104 | Principles of Animation | 1 | 1 | 2 | 4 | 3 |
| 5 | PC | DGA105 | Digital Art | 1 | 2 | 2 | 5 | 4 |
| 6 | PC | DGA106 | UI UX Design | 1 | 2 | 0 | 3 | 3 |
| 7 | OE | | Open Elective (To be Chosen by Student) | 0 | 2 | 0 | 2 | 2 |
| 8 | OE | | Vocational (Minor) | 0 | 2 | 2 | 4 | 3 |
| 9 | OE | | Co-Curricular | 0 | 2 | 0 | 2 | 2 |
| Total Credits | | | | | | | | 23 |

| Semester 2 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sl. No. | Category of Course | Code No. | Course Title | Hours per week | | | Total Contact hrs/week | Credits |
| | | | | L | T | P | | |
| 1 | PC | DGA201 | Communicative English-II | 1 | 0 | 2 | 3 | 2 |
| 2 | PC | DGA202 | Level Design for Games | 1 | 2 | 0 | 3 | 3 |
| 3 | PC | DGA203 | 2D Game Design | 1 | 2 | 2 | 5 | 4 |
| 4 | PC | DGA204 | Pre-Production | 1 | 2 | 0 | 3 | 3 |
| 5 | PC | DGA205 | Programming in C# | 1 | 1 | 0 | 2 | 2 |
| 6 | PC | DGA206 | History of Gaming | 2 | 0 | 0 | 2 | 2 |
| 7 | OE | | Open Elective (To be Chosen by Student) | 0 | 2 | 0 | 2 | 2 |
| 8 | OE | | Vocational (Minor) | 0 | 2 | 2 | 4 | 3 |
| 9 | OE | | Co-Curricular | 0 | 2 | 0 | 2 | 2 |
| 10 | PR | | Live Project I (Industry Tie-up) | 0 | 0 | 0 | 0 | |
| Total Credits | | | | | | | | 23 |

| Detailed First Year Curriculum Contents<br>SEMESTER - I | | |
|---|---|---|
| Course Code | : | DGA101 |
| Course Title | : | Communicative English-I |
| Number of Credits | : | 2(L:1,T:0,P:2) |
| Prerequisites | ; | NIL |
| Course Category | : | PC |

**Objective:**

1. Develop effective verbal and written communication skills.
2. Enhance comprehension and interpretation abilities.
3. Foster critical thinking through engaging with diverse texts.
4. Cultivate interpersonal and group communication skills.
5. Apply language skills relevant to media and entertainment contexts.

**Course Content:**

1. Foundations of English Language
2. Reading Comprehension Strategies
3. Writing Techniques for Media
4. Verbal and Non-verbal Communication
5. Media Literacy and Critical Analysis
6. Presentation Skills for Media Professionals
7. Group Communication Dynamics
8. Cultural Sensitivity in Communication

**Course Outcome:**

1. Proficient written and verbal communication in media settings.
2. Critical analysis and interpretation of media-related content.
3. Effective presentation and public speaking abilities.
4. Collaborative communication skills suitable for team environments.
5. Application of language skills in media and entertainment contexts.

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| Detailed First Year Curriculum Contents SEMESTER - I | | |
|---|---|---|
| Course Code | : | DGA102 |
| Course Title | : | Drawing & Painting |
| Number of Credits | : | 2(L:1,T:1,P:0) |
| Prerequisites | ; | NIL |
| Course Category | : | PC |

**Objective:**

1. Develop foundational drawing and painting skills applicable to game art.
2. Understand the principles of composition and color theory in the context of game design.
3. Acquire proficiency in digital drawing and painting tools commonly used in the game industry.
4. Apply drawing and painting techniques to create concept art and illustrations for games.

**Course Content:**

1. Basic Drawing Techniques and Sketching
2. Principles of Composition in Game Art
3. Color Theory and Application in Game Design
4. Digital Drawing and Painting Tools for Game Artists
5. Concept Art Creation for Games

**Course Outcome:**

1. Demonstrate improved drawing and sketching skills.
2. Apply principles of composition and color effectively in game art.
3. Utilize digital drawing and painting tools proficiently.
4. Create concept art and illustrations suitable for game development.

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| Detailed First Year Curriculum Contents SEMESTER - I | | |
|---|---|---|
| Course Code | : | DGA103 |
| Course Title | : | Storytelling & Storyboarding |
| Number of Credits | : | 2(L:0,T:2,P:0) |
| Prerequisites | ; | NIL |
| Course Category | : | PC |

**Objective:**

1. Develop skills in crafting compelling narratives for game environments.

2. Understand the principles of storytelling and its application to game design.
3. Learn the art of storyboarding as a visual storytelling tool in game development.
4. Apply narrative and storyboarding techniques to enhance game design concepts.

**Course Content:**

1. Fundamentals of Storytelling in Game Design
2. Narrative Structures in Game Development
3. Creating Engaging Characters for Games
4. Principles of Storyboarding in the Gaming Industry
5. Applying Storytelling and Storyboarding to Game Art

**Course Outcome:**

1. Craft engaging narratives suitable for game environments.
2. Understand various narrative structures relevant to game design.
3. Create compelling characters for game storytelling.
4. Develop proficiency in using storyboarding as a visual storytelling tool in games.

| **Detailed First Year Curriculum Contents SEMESTER - I** | | |
|---|---|---|
| Course Code | : | DGA104 |
| Course Title | : | Principles of Animation |
| Number of Credits | : | 3(L:1,T:1,P:2) |
| Prerequisites | ; | NIL |
| Course Category | : | PC |

**Objective:**

1. Develop a foundational understanding of animation principles in the context of game art.
2. Explore the application of animation techniques to enhance game characters and environments.
3. Acquire skills in creating fluid and realistic animations for various gaming platforms.
4. Understand the role of animation in conveying emotions, actions, and interactions in games.

**Course Content:**

1. Introduction to Animation Principles for Games
2. Character Animation Techniques in Game Art
3. Environmental Animation and Interactivity
4. Advanced Animation Techniques for Games
5. Integration of Animation with Game Design

**Course Outcome:**

1. Apply fundamental animation principles to game art.
2. Create dynamic and expressive character animations for games.
3. Develop environmental animations that enhance the gaming experience.

4. Apply advanced animation techniques to improve game visuals and interactions.

| Detailed First Year Curriculum Contents SEMESTER - I | | |
|---|---|---|
| Course Code | : | DGA105 |
| Course Title | : | Digital Art |
| Number of Credits | : | 4(L:1,T:2,P:2) |
| Prerequisites | ; | NIL |
| Course Category | : | PC |

**Objective:**

1. Develop proficiency in digital art creation for game development.
2. Understand the role of digital art in shaping the visual aspects of games.
3. Acquire skills in using digital tools and software for game art production.
4. Explore various styles and techniques in digital art relevant to gaming.

**Course Content:**

1. Introduction to Digital Art in Game Development
2. Digital Painting Techniques for Game Assets
3. Concept Art and Visualization in Games
4. Texturing and Shading for Game Environments
5. Applying Digital Art to Character Design in Games

**Course Outcome:**

1. Create digital art assets suitable for game environments.
2. Employ digital painting techniques to enhance game visuals.
3. Develop concept art that aligns with game design objectives.
4. Apply texturing and shading skills to enhance game graphics.
5. Integrate digital art effectively into character design for games.

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| Detailed First Year Curriculum Contents SEMESTER - II | | |
|---|---|---|
| Course Code | : | DGA106 |
| Course Title | : | UI UX Design |
| Number of Credits | : | 3(L:1,T:2,P:0) |

| | | |
|---|---|---|
| Prerequisites | ; | NIL |
| Course Category | : | PC |

**Objective:**

1. Develop a deep understanding of UI/UX principles in the context of game design.
2. Acquire skills to create user-friendly interfaces for games.
3. Explore techniques to enhance the overall user experience in gaming.
4. Apply UI/UX design principles to different gaming platforms.

**Course Content:**

1. Introduction to UI/UX Design in Gaming
2. Principles of User Interface Design for Games
3. User Experience Enhancement Strategies
4. Responsive Design for Various Gaming Platforms
5. Usability Testing and Iterative Design in Gaming

**Course Outcome:**

1. Design and create effective UI/UX elements for games.
2. Apply principles of user interface design to enhance game navigation.
3. Implement strategies to improve the overall user experience in gaming.
4. Develop UI/UX designs suitable for different gaming platforms.
5. Conduct usability testing and iterate designs based on feedback.

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| **Detailed First Year Curriculum Contents SEMESTER - II** | | |
|---|---|---|
| Course Code | : | DGA201 |
| Course Title | : | Communicative English-II |
| Number of Credits | : | 2(L:1,T:0,P:2) |
| Prerequisites | ; | NIL |
| Course Category | : | PC |

**Objective:**

1. Enhance proficiency in English language skills for effective communication.
2. Develop advanced writing skills suitable for various media platforms.
3. Understand the principles of effective verbal and non-verbal communication.
4. Explore advanced concepts in media-related language usage.
5. Apply communication strategies in diverse media contexts.

**Course Content:**

1. Advanced Writing Techniques for Media
2. Verbal and Non-Verbal Communication Strategies
3. Professional Communication in Media Industry
4. Media-related Language Usage and Style
5. Language Proficiency in Different Media Genres
6. Effective Communication in Visual and Digital Media
7. Multimodal Communication Skills

**Course Outcome:**

1. Improved proficiency in written and spoken English.
2. Advanced writing skills suitable for various media genres.
3. Enhanced understanding of effective communication principles.
4. Application of advanced language usage in media contexts.
5. Proficient communication in diverse media platforms.

| **Detailed First Year Curriculum Contents SEMESTER - II** | | |
|---|---|---|
| Course Code | : | DGA202 |
| Course Title | : | Level Design for Games |
| Number of Credits | : | 3(L:1,T:2,P:0) |
| Prerequisites | ; | NIL |
| Course Category | : | PC |

**Objective:**

1. Understand the fundamentals of level design in the context of game development.
2. Learn to create engaging and challenging game levels.
3. Explore techniques for storytelling through level design.
4. Acquire skills to design levels that enhance player experience.

**Course Content:**

1. Introduction to Level Design Principles
2. Fundamentals of Spatial Design in Games
3. Creating Puzzles and Challenges in Game Levels
4. Narrative Integration in Level Design
5. Playtesting and Iterative Level Design

**Course Outcome:**

1. Apply fundamental principles of level design in game development.
2. Design and create immersive and challenging game levels.
3. Integrate storytelling elements seamlessly into level design.
4. Develop skills to enhance the overall player experience through level design.

5. Conduct effective playtesting and iterate on level designs based on feedback.

| Detailed First Year Curriculum Contents<br>SEMESTER - II | | |
|---|---|---|
| Course Code | : | DGA203 |
| Course Title | : | 2D Game Design |
| Number of Credits | : | 4(L:1,T:2,P:2) |
| Prerequisites | ; | NIL |
| Course Category | : | PC |

**Objective:**

1. Understand the principles and elements of 2D game design.
2. Learn to conceptualize and plan game mechanics for 2D games.
3. Acquire skills in creating visually appealing 2D game assets.
4. Explore the integration of storytelling in 2D game design.

**Course Content:**

1. Introduction to 2D Game Design Principles
2. Game Mechanics and Prototyping for 2D Games
3. Art and Animation Techniques for 2D Games
4. Designing User Interfaces for 2D Games
5. Storytelling in 2D Game Environments

**Course Outcome:**

1. Apply fundamental principles of 2D game design.
2. Conceptualize and plan game mechanics for 2D games.
3. Create visually appealing 2D game assets.
4. Integrate storytelling elements effectively in 2D game design.
5. Develop a 2D game prototype demonstrating acquired design skills.

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| Detailed First Year Curriculum Contents<br>SEMESTER - II | | |
|---|---|---|
| Course Code | : | DGA204 |
| Course Title | : | Pre-Production |
| Number of Credits | : | 3(L:1,T:2,P:0) |

| | | |
|---|---|---|
| Prerequisites | ; | NIL |
| Course Category | : | PC |

**Objective:**

1. Understand the importance and process of pre-production in game development.
2. Learn to create effective game design documents.
3. Develop skills in project planning and management for game development.
4. Acquire knowledge of legal and ethical considerations in game pre-production.

**Course Content:**

1. Introduction to Game Development Pre-Production
2. Creating Comprehensive Game Design Documents
3. Project Planning and Management in Game Development
4. Legal and Ethical Considerations in Game Pre-Production
5. Prototyping and Playtesting Strategies

**Course Outcome:**

1. Demonstrate understanding of the role and significance of pre-production in game development.
2. Develop effective game design documents for different game genres.
3. Apply project planning and management skills in the context of game development.
4. Identify and address legal and ethical considerations in game pre-production.
5. Create a game prototype and conduct playtesting sessions for iterative improvement.

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| Detailed First Year Curriculum Contents SEMESTER - II | | |
|---|---|---|
| Course Code | : | DGA205 |
| Course Title | : | Programming in C# |
| Number of Credits | : | 2(L:1,T:1,P:0) |
| Prerequisites | ; | NIL |
| Course Category | : | PC |

**Objective:**

1. Develop proficiency in the C# programming language.
2. Understand the application of programming concepts in game development.
3. Learn to code and implement various game mechanics.
4. Acquire problem-solving skills through programming challenges.
5. Familiarize with debugging and optimization techniques in game programming.

**Course Content:**

1. Introduction to C# Programming Language

2. Data Types, Variables, and Operators in C#
3. Control Flow and Decision Structures
4. Functions and Methods in C#
5. Object-Oriented Programming (OOP) Concepts in C#
6. Unity Game Development with C#
7. Debugging and Optimization in Game Programming

**Course Outcome:**

1. Demonstrate proficiency in using the C# programming language.
2. Apply programming concepts to solve problems in the context of game development.
3. Code and implement various game mechanics using C#.
4. Solve programming challenges to enhance problem-solving skills.
5. Debug and optimize game code for improved performance.
6. Create a simple game project using Unity and C#.

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| Detailed First Year Curriculum Contents<br>SEMESTER - II | | |
|---|---|---|
| Course Code | : | DGA206 |
| Course Title | : | History of Gaming |
| Number of Credits | : | 2(L:2,T:0,P:0) |
| Prerequisites | : | NIL |
| Course Category | : | PC |

**Objective:**

1. Understand the historical evolution of the gaming industry.
2. Explore the major milestones and developments in gaming history.
3. Analyze the impact of technological advancements on gaming.
4. Examine the cultural and societal influences on game development.
5. Gain insights into the history of game design and innovation.

**Course Content:**

1. Early History of Gaming: From Analog to Digital
2. Arcade Era and the Rise of Home Consoles
3. The Birth and Evolution of PC Gaming
4. Technological Advances: Graphics, Sound, and Processing Power
5. Impact of Gaming on Popular Culture
6. Evolution of Game Genres and Design Concepts
7. Notable Moments and Trends in Gaming History

**Course Outcome:**

1. Demonstrate knowledge of key events and phases in the history of gaming.
2. Analyze the influence of technological advancements on gaming evolution.

3. Discuss the impact of gaming on culture and society.
4. Understand the evolution of game design concepts and genres.
5. Develop a historical perspective on the gaming industry.

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# CHAPTER 3
# SECOND YEAR CURRICULUM STRUCTURE

| Semester 3 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sl. No. | Category of Course | Code No. | Course Title | Hours per week | | | Total Contact hrs/week | Credits |
| | | | | L | T | P | | |
| 1 | PC | DGA301 | UI/UX for Games Design | 1 | 2 | 0 | 3 | 3 |
| 2 | PC | DGA302 | 3D Game Art Production Techniques - I | 1 | 1 | 2 | 4 | 3 |
| 3 | PC | DGA303 | Digital Sculpting Techniques | 1 | 2 | 2 | 5 | 4 |
| 4 | PC | DGA304 | Game Engine fundamentals - I | 1 | 2 | 2 | 5 | 4 |
| 5 | PC | DGA305 | Story Telling for Games | 1 | 1 | 0 | 2 | 2 |
| 6 | OE | | Open Elective (To be Chosen by Student) | 0 | 2 | 0 | 2 | 2 |
| 7 | OE | | Vocational (Minor) | 0 | 2 | 2 | 4 | 3 |
| 8 | OE | | Co-Curricular | 0 | 2 | 0 | 2 | 2 |
| Total Credits | | | | | | | | 23 |

| Semester 4 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sl. No. | Category of Course | Code No. | Course Title | Hours per week | | | Total Contact hrs/week | Credits |
| | | | | L | T | P | | |
| 1 | PC | DGA401 | Game Psychology & Research | 2 | 0 | 0 | 2 | 2 |
| 2 | PC | DGA402 | 3D Game Art Production Techniques - II | 1 | 2 | 0 | 3 | 3 |
| 3 | PC | DGA403 | Mobile Game art & Design | 1 | 1 | 0 | 2 | 2 |
| 4 | PC | DGA404 | Game Engine fundamentals - II | 1 | 2 | 0 | 3 | 3 |
| 5 | PC | DGA405 | Game Audio foundations | 1 | 1 | 0 | 2 | 2 |
| 6 | PC | DGA406 | JavaScript Programming | 1 | 1 | 0 | 2 | 2 |
| 7 | PC | DGA407 | Community Connect | 0 | 2 | 0 | 2 | 2 |
| 8 | OE | | Open Elective(To be chosen by Student) | 0 | 2 | 0 | 2 | 2 |
| 9 | OE | | Vocational (Minor) | 0 | 2 | 2 | 4 | 3 |
| 10 | OE | | Co-Curricular | 0 | 2 | 0 | 2 | 2 |
| 11 | PR | | Live Project II (Industry Tie- up) | 0 | 0 | 0 | 0 | 0 |
| Total Credits | | | | | | | | 23 |

| Detailed First Year Curriculum Contents<br>SEMESTER - III | | |
|---|---|---|
| Course Code | : | DGA301 |
| Course Title | : | UI/UX for Games Design |
| Number of Credits | : | 3(L:1,T:2,P:0) |
| Prerequisites | ; | NIL |
| Course Category | : | PC |

**Objective:**

1. Understand the principles of User Interface (UI) design for games.
2. Learn User Experience (UX) concepts and their application in game design.
3. Develop skills in creating intuitive and visually appealing game interfaces.
4. Explore the importance of player interaction and feedback in game UI/UX.
5. Analyze case studies of successful game UI/UX designs.

**Course Content:**

1. Introduction to UI/UX Design in Gaming
2. Principles of Effective UI Design for Games
3. Understanding Player Psychology in UX Design
4. Creating Responsive and Accessible Game Interfaces
5. Importance of Consistency and Feedback in UX
6. Case Studies: Successful Game UI/UX Examples
7. Prototyping and Testing UI/UX Designs in Games

**Course Outcome:**

1. Design effective and user-friendly UI for games.
2. Apply UX principles to enhance player experience in games.
3. Create responsive and visually appealing game interfaces.
4. Understand the psychology of player interaction and feedback.
5. Analyze and critique existing game UI/UX designs.

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| Detailed First Year Curriculum Contents<br>SEMESTER - III | | |
|---|---|---|
| Course Code | : | DGA302 |
| Course Title | : | 3D Game Art Production Techniques - I |
| Number of Credits | : | 3(L:1,T:1,P:2) |

| | | |
|---|---|---|
| Prerequisites | ; | NIL |
| Course Category | : | PC |

**Objective:**

1. Acquire fundamental skills in 3D game art production.
2. Understand the basics of 3D modeling and texturing for games.
3. Explore various techniques for creating game-ready 3D assets.
4. Develop proficiency in industry-standard 3D art tools.
5. Gain insights into the workflow of 3D game art production.

**Course Content:**

1. Introduction to 3D Game Art Production
2. Fundamentals of 3D Modeling for Games
3. Texturing Techniques for Game Assets
4. UV Mapping and Unwrapping in 3D Game Art
5. Creating 3D Characters and Environments
6. Introduction to Sculpting for Games
7. Overview of 3D Art Software Tools
8. Workflow in 3D Game Art Production

**Course Outcome:**

1. Create 3D game assets using industry-standard techniques.
2. Demonstrate proficiency in 3D modeling for games.
3. Apply texturing techniques to enhance game asset visuals.
4. Understand the importance of UV mapping in 3D game art.
5. Develop a portfolio showcasing 3D game art skills.

*******

| **Detailed First Year Curriculum Contents SEMESTER - III** | | |
|---|---|---|
| Course Code | : | DGA303 |
| Course Title | : | Digital Sculpting Techniques |
| Number of Credits | : | 4(L:1,T:2,P:2) |
| Prerequisites | ; | NIL |
| Course Category | : | PC |

**Objective:**

1. Develop advanced skills in digital sculpting for game art.
2. Understand the principles and techniques of digital sculpting.
3. Explore the use of digital sculpting tools for character design.
4. Learn to create detailed and visually appealing 3D sculpts.

5. Apply digital sculpting in the context of game asset creation.

**Course Content:**

1. Introduction to Digital Sculpting
2. Tools and Techniques in Digital Sculpting Software
3. Anatomy Study for Digital Sculpting
4. Creating Detailed Characters and Creatures
5. Sculpting Environments and Props for Games
6. Integration of Digital Sculpting in Game Art Workflow
7. Texturing and Rendering in Digital Sculpting
8. Real-world Applications of Digital Sculpting

**Course Outcome:**

1. Produce detailed digital sculpts for game characters and environments.
2. Demonstrate proficiency in digital sculpting software.
3. Apply anatomical knowledge to enhance digital sculpts.
4. Integrate digital sculpting into the broader game art creation process.
5. Develop a portfolio showcasing digital sculpting skills.

*******

| **Detailed First Year Curriculum Contents SEMESTER - III** | | |
|---|---|---|
| Course Code | : | DGA304 |
| Course Title | : | Game Engine fundamentals - I |
| Number of Credits | : | 4(L:1,T:2,P:2) |
| Prerequisites | : | NIL |
| Course Category | : | PC |

**Objective:**

1. Acquire a foundational understanding of game engines and their components.
2. Explore the basics of game development environments and tools.
3. Understand the principles of game physics, rendering, and scripting.
4. Learn to create simple games using fundamental game engine features.
5. Gain insight into the role of game engines in the game development pipeline.

**Course Content:**

1. Introduction to Game Engines and Development Environments
2. Components of Game Engines: Physics, Rendering, and Scripting
3. Overview of Popular Game Engines: Unity and Unreal Engine
4. Basics of Game Asset Integration and Asset Pipelines
5. Creating Simple Games: Projects and Exercises

6. Game Engine Scripting and Programming Fundamentals
7. Optimization Techniques for Game Engines
8. Real-world Applications of Game Engine Fundamentals

**Course Outcome:**

1. Develop basic games using popular game engines.
2. Understand the underlying principles of game engine components.
3. Demonstrate proficiency in scripting for game development.
4. Integrate game assets into a cohesive game environment.
5. Apply optimization techniques for efficient game development.

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| **Detailed First Year Curriculum Contents SEMESTER - III** | | |
|---|---|---|
| Course Code | : | DGA305 |
| Course Title | : | Storytelling for Games |
| Number of Credits | : | 2(L:1,T:1,P:0) |
| Prerequisites | ; | NIL |
| Course Category | : | PC |

**Objective:**

1. Comprehend the role of storytelling in the context of game development.
2. Develop narrative skills tailored for interactive and immersive gaming experiences.
3. Understand the structure of game narratives, including character development and plot arcs.
4. Explore different storytelling techniques and styles in the gaming industry.
5. Apply storytelling principles to enhance the overall gaming experience.

**Course Content:**

1. Importance of Storytelling in Game Design
2. Elements of Game Narratives: Characters, Settings, and Plot
3. Narrative Structures in Games: Linear vs. Non-linear Approaches
4. Dialogue Writing and Voice Acting for Games
5. Role of Storyboards and Animatics in Game Storytelling
6. Interactive Storytelling and Player Agency
7. Case Studies: Successful Game Storytelling Examples
8. Collaborative Storytelling in Game Development Teams

**Course Outcome:**

1. Develop compelling and engaging game narratives.
2. Create characters and settings that resonate with the target audience.
3. Understand and implement different narrative structures in game design.

4. Demonstrate proficiency in dialogue writing and voice acting for games.
5. Apply storytelling techniques to enhance the player's interactive experience.

******

| Detailed First Year Curriculum Contents<br>SEMESTER - IV | | |
|---|---|---|
| Course Code | : | DGA401 |
| Course Title | : | Game Psychology & Research |
| Number of Credits | : | 2(L:2,T:0,P:0) |
| Prerequisites | ; | NIL |
| Course Category | : | PC |

**Objective:**

1. Understand the psychological aspects influencing player behavior in gaming.
2. Apply psychological principles to create engaging and immersive game experiences.
3. Explore research methods to gather insights into player preferences and trends.
4. Analyze the impact of game design choices on player emotions and motivations.
5. Utilize psychological research to enhance game mechanics and user experiences.

**Course Content:**

1. Introduction to Game Psychology: Motivations and Rewards
2. Player Types and Gaming Preferences
3. Behavioral Psychology in Game Design
4. Emotions and Immersion in Games
5. User Experience (UX) Research in Gaming
6. Ethical Considerations in Game Psychology and Research
7. Case Studies: Successful Implementation of Game Psychology
8. Playtesting and Iterative Design based on Psychological Feedback

**Course Outcome:**

1. Apply psychological principles to create games that resonate with diverse player types.
2. Understand the emotional impact of game design choices on players.
3. Conduct effective user research to inform game design decisions.
4. Implement ethical considerations in applying psychology to game design.
5. Enhance user experiences through playtesting and iterative design based on psychological insights.

*******

| Detailed First Year Curriculum Contents<br>SEMESTER - IV | | |
|---|---|---|
| Course Code | : | DGA402 |
| Course Title | : | 3D Game Art Production Techniques - II |
| Number of Credits | : | 3(L:1,T:2,P:0) |
| Prerequisites | ; | NIL |
| Course Category | : | PC |

**Objective:**

1. Develop advanced skills in 3D modeling for game environments and characters.
2. Master texturing and painting techniques for realistic and stylized game assets.
3. Understand advanced 3D animation principles for game characters and objects.
4. Explore body mechanics and rigging for creating dynamic and responsive game animations.
5. Apply industry-standard techniques for creating visually appealing and cohesive game art.

**Course Content:**

1. Advanced 3D Modeling Techniques
2. Texturing and Painting for Game Assets
3. Advanced 3D Animation Principles
4. Body Mechanics in Game Animation
5. Rigging for Game Characters
6. Industry-standard Game Art Production Techniques
7. Case Studies: Successful Game Art Production in the Gaming Industry
8. Project Work: Application of Advanced Techniques in a Game Art Project

**Course Outcome:**

1. Create complex 3D models for game environments and characters.
2. Apply advanced texturing and painting techniques for realistic and stylized game assets.
3. Demonstrate proficiency in advanced 3D animation principles for games.
4. Rig game characters for dynamic and responsive animations.
5. Produce high-quality game art using industry-standard techniques.

*******

| Detailed First Year Curriculum Contents<br>SEMESTER - IV | | |
|---|---|---|
| Course Code | : | DGA403 |
| Course Title | : | Mobile Game art & Design |

| | | |
|---|---|---|
| Number of Credits | : | 2(L:1,T:1,P:0) |
| Prerequisites | ; | NIL |
| Course Category | : | PC |

**Objective:**

1. Understand the unique challenges and opportunities in mobile game art and design.
2. Develop skills in creating optimized and visually appealing assets for mobile platforms.
3. Explore effective design principles for mobile game interfaces.
4. Master the art of creating engaging and intuitive user experiences in mobile games.
5. Learn the technical aspects of mobile game design, including performance optimization.

**Course Content:**

1. Introduction to Mobile Game Art and Design
2. Creating Optimized Assets for Mobile Platforms
3. Design Principles for Mobile Game Interfaces
4. User Experience (UX) Design for Mobile Games
5. Technical Aspects of Mobile Game Design
6. Case Studies: Successful Mobile Game Art and Design Projects
7. Project Work: Designing a Mobile Game from Concept to Execution

**Course Outcome:**

1. Create visually appealing and optimized game assets for mobile platforms.
2. Apply effective design principles to mobile game interfaces.
3. Design engaging and intuitive user experiences for mobile games.
4. Understand and implement technical aspects for mobile game design.
5. Develop a comprehensive mobile game art and design project from concept to execution.

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| **Detailed First Year Curriculum Contents SEMESTER - IV** | | |
|---|---|---|
| Course Code | : | DGA404 |
| Course Title | : | Game Engine fundamentals - II |
| Number of Credits | : | 3(L:1,T:2,P:0) |
| Prerequisites | ; | NIL |
| Course Category | : | PC |

**Objective:**

1. Deepen understanding of advanced concepts in game engines.
2. Master the use of advanced features and tools within game engines.

3. Develop proficiency in scripting and programming for game development.
4. Explore advanced techniques for optimizing game performance.
5. Understand the integration of game art assets and design into complex game engines.

**Course Content:**

1. Advanced Features and Tools in Game Engines
2. Scripting and Programming for Game Development
3. Advanced Techniques for Optimizing Game Performance
4. Integration of Complex Game Art Assets
5. Real-time Collaboration and Version Control in Game Development
6. Case Studies: Advanced Game Engine Implementation
7. Project Work: Developing a Game Level Using Advanced Engine Features

**Course Outcome:**

1. Utilize advanced features and tools within game engines proficiently.
2. Demonstrate expertise in scripting and programming for game development.
3. Implement advanced techniques to optimize game performance.
4. Integrate complex game art assets seamlessly into game engines.
5. Collaborate in real-time and use version control in the game development process.
6. Develop a game level showcasing proficiency in advanced engine features.

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| **Detailed First Year Curriculum Contents SEMESTER - IV** | | |
|---|---|---|
| Course Code | : | DGA405 |
| Course Title | : | Game Audio foundations |
| Number of Credits | : | 2(L:1,T:1,P:0) |
| Prerequisites | ; | NIL |
| Course Category | : | PC |

**Objective:**

1. Understand the fundamental principles of game audio design.
2. Explore techniques for creating immersive and interactive game audio experiences.
3. Master the use of audio editing tools and software in game development.
4. Learn to integrate music and sound effects into different game genres.
5. Gain insights into the psychological impact of audio in gaming.

**Course Content:**

1. Principles of Game Audio Design
2. Techniques for Interactive Game Audio
3. Audio Editing Tools and Software in Game Development
4. Music and Sound Effects Integration in Different Game Genres
5. Psychological Impact of Audio in Gaming

6. Case Studies: Notable Examples of Effective Game Audio Implementation
7. Project Work: Designing and Implementing Game Audio for a Game Level

**Course Outcome:**

1. Apply fundamental principles to design effective game audio.
2. Implement techniques for creating immersive and interactive audio experiences.
3. Proficiently use audio editing tools and software in game development.
4. Integrate music and sound effects seamlessly into various game genres.
5. Understand the psychological impact of audio and its role in enhancing gaming experiences.
6. Showcase practical skills through the design and implementation of game audio for a game level.

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| **Detailed First Year Curriculum Contents SEMESTER - IV** | | |
|---|---|---|
| Course Code | : | DGA406 |
| Course Title | : | JavaScript Programming |
| Number of Credits | : | 2(L:1,T:1,P:0) |
| Prerequisites | : | NIL |
| Course Category | : | PC |

**Objective:**

1. Develop proficiency in JavaScript programming for game development.
2. Understand the role of JavaScript in creating interactive and dynamic game elements.
3. Learn to use JavaScript to manipulate and control game behavior.
4. Explore advanced concepts of JavaScript relevant to game programming.
5. Apply JavaScript in conjunction with other game development technologies.

**Course Content:**

1. Introduction to JavaScript for Game Development
2. Basics of Interactive and Dynamic Web Content
3. JavaScript for Game Behavior Control
4. Advanced JavaScript Concepts for Games
5. Integration of JavaScript with Game Development Technologies
6. Practical Exercises and Coding Assignments
7. Mini-Project: Developing a Simple Game Using JavaScript

**Course Outcome:**

1. Acquire proficiency in JavaScript programming for game development.

2. Demonstrate the ability to create interactive and dynamic game elements using JavaScript.
3. Apply JavaScript to manipulate and control various aspects of game behavior.
4. Understand advanced JavaScript concepts relevant to game programming.
5. Integrate JavaScript effectively with other game development technologies.
6. Showcase practical skills through the development of a simple game using JavaScript.

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| Detailed First Year Curriculum Contents<br>SEMESTER - IV | | |
|---|---|---|
| Course Code | : | DGA407 |
| Course Title | : | Community Connect |
| Number of Credits | : | 2(L:0,T:2,P:0) |
| Prerequisites | ; | NIL |
| Course Category | : | PC |

**Objective:**

1. Understand the concept and importance of community engagement in media communication.
2. Explore various strategies for fostering community connections.
3. Develop skills in creating and maintaining positive relationships with diverse communities.
4. Understand the role of media in building and sustaining community partnerships.
5. Gain insights into the ethical considerations of community engagement in media.
6. Learn effective communication methods for community outreach.
7. Explore case studies and best practices in successful community connect initiatives.
8. Develop practical skills in designing and implementing community-oriented media projects.

**Course Content:**

1. Introduction to Community Connect in Media Communication
2. Strategies for Fostering Community Connections
3. Building Positive Relationships with Diverse Communities
4. Media's Role in Building and Sustaining Community Partnerships
5. Ethical Considerations in Community Engagement
6. Effective Communication Methods for Community Outreach
7. Case Studies and Best Practices in Community Connect Initiatives
8. Designing and Implementing Community-Oriented Media Projects

**Course Outcome:**

1. Comprehensive understanding of community engagement in media communication.
2. Proficiency in devising strategies for effective community connections.
3. Skills in building positive relationships with diverse communities.
4. Understanding the role of media in fostering community partnerships.
5. Ethical awareness in community engagement practices.
6. Effective communication methods for successful community outreach.
7. Knowledge of case studies and best practices in community connect initiatives.
8. Practical skills in designing and implementing community-oriented media projects.

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# CHAPTER 4
# THIRD YEAR CURRICULUM STRUCTURE

| Semester 5 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sl. No. | Category of Course | Code No. | Course Title | Hours per week | | | Total Contact hrs/week | Credits |
| | | | | L | T | P | | |
| 1 | PC | DGA501 | Fundamentals of Web design and development | 1 | 2 | 0 | 3 | 3 |
| 2 | PC | DGA502 | Game Architecture and Hardware | 1 | 2 | 2 | 5 | 4 |
| 3 | PC | DGA503 | World Level Design Techniques - I | 1 | 1 | 2 | 4 | 3 |
| 4 | PC | DGA504 | Building AR based Games | 1 | 1 | 2 | 4 | 3 |
| 5 | PC | DGA505 | Android Game Development | 1 | 2 | 0 | 3 | 3 |
| 6 | PC | DGA506 | Real time Graphics, shaders and effects | 1 | 2 | 0 | 3 | 3 |
| 7 | OE | | Co-Curricular | 0 | 2 | 0 | 2 | 2 |
| 8 | PR | | Project (Web and AR) | 0 | 1 | 4 | 5 | 3 |
| Total Credits | | | | | | | | 30 |

| Semester 6 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sl. No. | Category of Course | Code No. | Course Title | Hours per week | | | Total Contact hrs/week | Credits |
| | | | | L | T | P | | |
| 1 | DSE | | Apprenticeship with Indsutry | 0 | 26 | 0 | 26 | 26 |
| Total Credits | | | | | | | | 26 |

## Detailed First Year Curriculum Contents
## SEMESTER - V

| | | |
|---|---|---|
| Course Code | : | DGA501 |
| Course Title | : | Fundamentals of Web design and development |
| Number of Credits | : | 3(L:1,T:2,P:0) |

| | | |
|---|---|---|
| Prerequisites | ; | NIL |
| Course Category | : | PC |

**Objective:**

1. Provide a comprehensive understanding of web design and development fundamentals.
2. Introduce key principles of creating visually appealing and user-friendly websites.
3. Develop proficiency in HTML, CSS, and other essential web technologies.
4. Explore responsive web design techniques for optimal viewing across devices.
5. Foster the ability to design and develop interactive and engaging web content.
6. Emphasize the importance of user experience and accessibility in web design.

**Course Content:**

1. Introduction to Web Design and Development Principles
2. HTML Fundamentals: Structure and Semantic Markup
3. CSS Fundamentals: Styling and Layout
4. Responsive Web Design Techniques
5. Introduction to JavaScript for Web Interactivity
6. Incorporating Multimedia and Interactive Elements
7. User Experience (UX) Design Principles
8. Accessibility Considerations in Web Design
9. Web Design Tools and Technologies
10. Practical Application and Hands-on Projects

**Course Outcome:**

1. Develop a solid understanding of fundamental web design and development concepts.
2. Apply HTML and CSS for creating well-structured and visually appealing web pages.
3. Implement responsive web design techniques for cross-device compatibility.
4. Incorporate JavaScript to add interactivity and dynamic elements to web content.
5. Create engaging and user-friendly web interfaces with multimedia elements.
6. Demonstrate knowledge of user experience (UX) design principles.
7. Ensure accessibility in web design for a diverse audience.
8. Utilize various web design tools and technologies effectively.
9. Showcase practical skills through hands-on projects in web design and development.

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| **Detailed First Year Curriculum Contents SEMESTER - V** | | |
|---|---|---|
| Course Code | : | DGA502 |
| Course Title | : | Game Architecture and Hardware |
| Number of Credits | : | 4(L:1,T:2,P:2) |
| Prerequisites | ; | NIL |

| Course Category | : | PC |
|---|---|---|

**Objective:**

1. Provide a comprehensive understanding of game architecture and hardware components.
2. Explore the principles behind game development and the role of hardware in gaming.
3. Familiarize students with the architecture of gaming consoles, PCs, and mobile devices.
4. Understand the interaction between software and hardware in the gaming industry.
5. Introduce concepts related to graphics processing units (GPUs) and central processing units (CPUs) in gaming.
6. Discuss the importance of optimizing games for different hardware specifications.
7. Examine emerging trends and technologies in game architecture and hardware.

**Course Content:**

1. Introduction to Game Architecture and Hardware Principles
2. Overview of Gaming Consoles, PCs, and Mobile Devices
3. Understanding Graphics Processing Units (GPUs) in Gaming
4. Central Processing Units (CPUs) and their Role in Gaming
5. Interaction Between Software and Hardware in Game Development
6. Optimization Techniques for Different Hardware Specifications
7. Emerging Trends and Technologies in Game Architecture and Hardware

**Course Outcome:**

1. Gain a comprehensive understanding of game architecture and hardware principles.
2. Familiarity with the architecture of gaming consoles, PCs, and mobile devices.
3. Understand the role and significance of GPUs and CPUs in gaming.
4. Ability to analyze and optimize games for different hardware specifications.
5. Knowledge of the interaction between software and hardware in game development.
6. Stay updated on emerging trends and technologies in game architecture and hardware.

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| **Detailed First Year Curriculum Contents SEMESTER - V** | | |
|---|---|---|
| Course Code | : | DGA503 |
| Course Title | : | World Level Design Techniques - I |
| Number of Credits | : | 3(L:1T:1,P:2) |
| Prerequisites | ; | NIL |
| Course Category | : | PC |

**Objective:**

1. Provide a foundational understanding of world design in the context of video games.
2. Explore the principles and techniques of designing immersive game environments.
3. Familiarize students with the tools and software used in world-level design.
4. Develop skills in creating diverse and engaging in-game landscapes.
5. Understand the importance of narrative-driven level design in video games.
6. Introduce the concept of player-centric design for optimal gaming experiences.
7. Encourage creative thinking and problem-solving in the context of world-level design.

**Course Content:**

1. Introduction to World Level Design Principles
2. Tools and Software for World-Level Design
3. Techniques for Creating Immersive Game Environments
4. Narrative-Driven Level Design in Video Games
5. Player-Centric Design Approaches
6. Creative Problem-Solving in World-Level Design
7. Case Studies of Successful World-Level Designs

**Course Outcome:**

1. Acquire foundational knowledge of world-level design principles.
2. Gain proficiency in using tools and software for world-level design.
3. Develop skills in creating diverse and immersive in-game environments.
4. Understand the role of narrative-driven level design in enhancing player experiences.
5. Apply player-centric design approaches for optimal gaming experiences.
6. Showcase creative problem-solving abilities in the context of world-level design.
7. Analyze and draw insights from case studies of successful world-level designs.

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| **Detailed First Year Curriculum Contents<br>SEMESTER - V** | | |
|---|---|---|
| Course Code | : | DGA504 |
| Course Title | : | Building AR based Games |
| Number of Credits | : | 3(L:1T:1,P:2) |
| Prerequisites | ; | NIL |
| Course Category | : | PC |

**Objective:**

1. Introduce the fundamental concepts of Augmented Reality (AR) in the context of game development.
2. Provide hands-on experience with AR development tools and platforms.
3. Explore the integration of AR technology with game design principles.

4. Develop skills in creating interactive and engaging AR-based gaming experiences.
5. Understand the technical aspects of building AR games, including coding and scripting.
6. Foster creativity in designing game elements that leverage AR capabilities.
7. Discuss the potential applications and future trends of AR in the gaming industry.

**Course Content:**

1. Introduction to Augmented Reality (AR) in Gaming
2. AR Development Tools and Platforms
3. Integration of AR with Game Design Principles
4. Hands-on AR Game Development
5. Technical Aspects: Coding and Scripting for AR Games
6. Creative Design for AR Game Elements
7. Applications and Future Trends of AR in Gaming

**Course Outcome:**

1. Acquire a solid understanding of Augmented Reality and its application in gaming.
2. Gain practical experience using AR development tools and platforms.
3. Integrate AR seamlessly with game design principles.
4. Demonstrate proficiency in creating interactive and engaging AR-based gaming experiences.
5. Develop technical skills in coding and scripting for AR games.
6. Showcase creative and innovative design approaches for AR game elements.
7. Discuss and analyze potential applications and future trends of AR in the gaming industry.

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| **Detailed First Year Curriculum Contents<br>SEMESTER - V** | | |
|---|---|---|
| Course Code | : | DGA505 |
| Course Title | : | Android Game Development |
| Number of Credits | : | 3(L:1,T:2,P:0) |
| Prerequisites | ; | NIL |
| Course Category | : | PC |

**Objective:**

1. Provide a comprehensive understanding of Android game development.
2. Introduce the Android development environment and tools for game creation.
3. Develop proficiency in designing and programming games for Android platforms.
4. Explore user interface (UI) and user experience (UX) design principles for Android games.

5. Understand the integration of multimedia elements, such as graphics and sound, in Android game development.
6. Foster creativity in game design tailored for Android devices.
7. Emphasize best practices for optimizing Android games for performance.

**Course Content:**

1. Introduction to Android Game Development
2. Android Development Environment and Tools
3. Designing and Programming Games for Android
4. UI and UX Design Principles for Android Games
5. Integration of Multimedia Elements in Android Games
6. Creative Game Design for Android Devices
7. Performance Optimization for Android Games

**Course Outcome:**

1. Acquire a thorough understanding of Android game development.
2. Gain practical experience using Android development tools.
3. Demonstrate proficiency in designing and programming games for Android platforms.
4. Apply UI and UX design principles to create engaging Android games.
5. Integrate multimedia elements effectively in Android game development.
6. Showcase creative and innovative game design tailored for Android devices.
7. Implement best practices for optimizing Android games for optimal performance.

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| **Detailed First Year Curriculum Contents SEMESTER - V** | | |
|---|---|---|
| Course Code | : | DGA506 |
| Course Title | : | Real time Graphics, shaders and effects |
| Number of Credits | : | 3(L:1,T:2,P:0) |
| Prerequisites | ; | NIL |
| Course Category | : | PC |

**Objective:**

1. Provide in-depth knowledge of real-time graphics rendering techniques.
2. Introduce the principles of shaders and their role in enhancing graphical effects.
3. Explore various visual effects used in contemporary game development.
4. Develop proficiency in creating and implementing shaders for real-time graphics.
5. Understand the impact of real-time graphics on immersive gameplay experiences.
6. Foster creativity in designing and applying visual effects in game environments.
7. Emphasize best practices for optimizing real-time graphics in game design.

**Course Content:**

1. Fundamentals of Real-time Graphics
2. Principles and Types of Shaders
3. Advanced Shader Programming
4. Visual Effects in Game Development
5. Creating and Implementing Shaders for Real-time Graphics
6. Impact of Real-time Graphics on Gameplay
7. Creative Application of Visual Effects in Game Environments
8. Best Practices for Optimizing Real-time Graphics

**Course Outcome:**

1. Acquire a deep understanding of real-time graphics rendering.
2. Demonstrate proficiency in shader programming for game development.
3. Implement various visual effects to enhance game aesthetics.
4. Apply creative approaches to designing and implementing visual effects.
5. Showcase the impact of real-time graphics on gameplay experiences.
6. Develop the ability to create and optimize shaders for immersive visuals.
7. Incorporate best practices for optimizing real-time graphics in game design.

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Dr. Millie Pant
(External Expert)