

BSc (Gaming)

Program Outcomes (POs)

- **PO01:** Product Development: Analyse, design and develop novel products and solutions for emerging new media opportunities.
- **PO02:** Skill Competency: Demonstrate globally accepted competent skills in passive and interactive space.
- **PO03:** Problem Analysis: Identify, formulate and solve complex media design challenges using fundamental principles involved in technology, design and storytelling.
- **PO04:** Modern Tool / Techniques usage: Select, adapt, and apply appropriate tools, techniques, resources to various activities, with an understanding of their boundaries.
- **PO05:** Professional Ethics: Understand and commit to professional ethics and IP regulations, responsibilities, and norms of professional publishing practices based on Criteria.
- **PO06:** Life-long learning: Recognize the need, and have the ability, to engage in independent learning for continual development as a creative professional.
- **PO07:** Communication Efficiency: Communicate effectively with the creative community, and with society at large by being able to comprehend audience/ viewers requirement and tell compelling story narratives, structured design processes, make effective presentations, and give and understand clear instructions.
- **PO08:** Societal and Environmental Concern: Understand and assess societal, environmental, health, safety, legal, and cultural issues within local and global contexts, and the consequential responsibilities relevant to creative requirements.
- **PO09:** Individual and Team work: Function effectively as an individual and as a member or leader in diverse teams and in multidisciplinary environments.
- **PO10:** Innovation and Entrepreneurship: Identify a timely opportunity and using innovation to pursue that opportunity to create value and wealth for the betterment of the individual and society at large.
- **PO11:** Conduct Investigations of complex production and distribution problems: Use research-based knowledge and research methods, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
- **PO12:** Project management and finance: Demonstrate knowledge and understanding of the computing and management principles and communicate efficiently with team, to manage projects and in multidisciplinary environments.

Program Specific Outcomes (PSO)

- PSO01.** Competent ideator in Gaming, designing and development industry
- PSO02.** Design characters, background grounds, colour scheme, Game storyboards and basic audio requisites for Gaming industry
- PSO03.** Develop and test solutions for interactive platforms with well-defined processes that meet specified needs for development.
- PSO04.** Classify various digital distribution pads in the gaming sector and generate content and adapt to emerging technologies and challenges

2019-20 Batch

Semester	Course Code	Course Name	Course Outcomes (COs)
I	20BSG1C03	History of Gaming	<p>CO1: Present game history, game development and genres</p> <p>CO2: Outline game theories and gamification techniques.</p> <p>CO3: List the principles involved in game design.</p> <p>CO4: Assess game requirements for various platforms</p> <p>CO5: List game platforms and engines available</p>
	20BSG1C05	Programming in C++	<p>CO1: Explain workflow techniques in C++</p> <p>CO2: List data types, operators and expression, statements in C++ programming.</p> <p>CO3: Describe arrays and functions</p> <p>CO4: Explain purpose of pointers and structure in C++.</p> <p>CO5: Explain graphics and time in C++programming</p>
	20BSG1C06	Preproduction	<p>CO1.Conceptualize stories for game development</p> <p>CO2. Illustrate game flow design techniques</p> <p>CO3.Develop game development scripts</p> <p>CO4. Create thumbnails and inspirational sketches.</p> <p>CO5. Design a game development bible.</p>
	20BSG1C06L	Preproduction Lab	<p>CO1. Conceptualize story concepts for game development</p> <p>CO2. Illustrate game flow design techniques</p> <p>CO3. Develop game development scripts</p> <p>CO4. Create thumbnails and inspirational sketches.</p> <p>CO5. Design a game development bible</p>
	20BSG1C05L	Programming in C++ Lab	<p>CO1: Explain workflow techniques in C++</p> <p>CO2: List data types, operators and expression, statements in C++ programming.</p> <p>CO3: Describe arrays and functions</p> <p>CO4: Explain purpose of pointers and structure in C++.</p> <p>CO5: Explain graphics and time in C++programming</p>

Semester	Course Code	Course Name	Course Outcomes (COs)
II	20BSG2C03	UXUI Design I	<p>CO1: Ability to present mobile UI design requirements.</p> <p>CO2: Ability to create frameworks, wireframes, task flows and information architecture.</p> <p>CO3: Ability to explain prototyping techniques in design</p> <p>CO4: Ability to perform usability testing methods from data generated by users.</p> <p>CO5: Ability to present the best practices in UX / UI Design.</p>
	20BSG2C03L	UXUI Design I Lab	<p>CO1: Apply principles behind HCI (Human Computer Interaction)</p> <p>CO2: List User Experience Design (UXD) techniques</p> <p>CO3: Capture User requirements</p> <p>CO4: Create navigation structure, layout in UI Design</p> <p>CO5: Build an application design</p>
	20BSG2C04	2D Game Design	<p>CO1: work with game engine interface</p> <p>CO2: create assets for game development</p> <p>CO3: Set up a component (physics/collides/ camera / levels / prefabs) in game engine</p> <p>CO4: Prototype a game</p> <p>CO5: Optimize and publish a game.</p>
	20BSG2C04L	2D Game Design Lab	<p>CO1: work with game engine interface</p> <p>CO2: create assets for game development</p> <p>CO3: Set up a component (physics/collides/ camera / levels / prefabs) in game engine</p> <p>CO4: Prototype a game</p> <p>CO5: Optimize and publish a game.</p>
	20BSG2C05	Programming in C#	<p>CO1: Explain workflow techniques in C# programming.</p> <p>CO2: Define the methods of decision making in C#</p> <p>CO3: Summarize the importance of arrays & classes</p> <p>CO4: Evaluate importance of inheritance, polymorphism & File i/o.</p> <p>CO5: Summarize the use of delegates & interfaces in C#</p>

Semester	Course Code	Course Name	Course Outcomes (COs)
	20BSG2C06	Digital Art	<p>CO1: Identify various file formats, properties and 2D assets requirements</p> <p>CO2: Create, modify artworks in raster graphics</p> <p>CO3: Apply vector art in creating graphics and illustration.</p> <p>CO4: Design character, sets and properties in game development.</p> <p>CO5: Build a 2d game using sprites.</p>
	20BSG2C06L	Digital Art Lab	<p>CO1: Identify various file formats, properties and 2D assets requirements</p> <p>CO2: Create, modify artworks in raster graphics</p> <p>CO3: Apply vector art in creating graphics and illustration.</p> <p>CO4: Design character, sets and properties in game development.</p> <p>CO5: Build a 2d game using sprites.</p>
	20BSG2C05L	Programming in C# Lab	<p>CO1: Explain workflow techniques in C# programming.</p> <p>CO2: Define the methods of decision making in C#</p> <p>CO3: Summarize the importance of arrays & classes</p> <p>CO4: Evaluate importance of inheritance, polymorphism & File i/o.</p> <p>CO5: Summarize the use of delegates & interfaces in C#</p>
III	19BSG3C01	UXUI Design II	<p>CO1: To present mobile UI design requirements.</p> <p>CO2: To create frameworks, wireframes, task flows and information architecture.</p> <p>CO3: To explain prototyping techniques in design.</p> <p>CO4 :To perform usability testing methods from data generated by users</p> <p>CO5 :To present the best practices in UX / UI Design.</p>
	19BSG3C01L	UXUI Design II Lab	<p>CO1: To present mobile UI design requirements.</p> <p>CO2: To create frameworks, wireframes, task flows and information architecture.</p> <p>CO3: To explain prototyping techniques in design.</p> <p>CO4 :To perform usability testing methods from data generated by users</p> <p>CO5 :To present the best practices in UX / UI Design.</p>

Semester	Course Code	Course Name	Course Outcomes (COs)
	19BSG3C02	3D Game Design	<p>CO1 :Ability to explain 3D game ecosystem</p> <p>CO2:Ability to design the resources for a 3D game development</p> <p>CO3:Ability to describe pipeline techniques required for a 3D game</p> <p>CO4:Ability to project the game mechanism and its interface</p> <p>CO5: Ability to explain game management and optimization techniques</p>
	19BSG3C03	Programming in Javascript	<p>CO1:Ability to explain JavaScript and their functions</p> <p>CO2:Ability to test statements and arrays of JavaScript</p> <p>CO3:Ability to present importance of function and event</p> <p>CO4:Ability to explain objects & Document Object Model</p> <p>CO5:Ability to create basic game controls script coding</p>
	19BSG3C03L	Programming in Javascript Lab	<p>CO1:Ability to explain JavaScript and their functions</p> <p>CO2:Ability to test statements and arrays of JavaScript</p> <p>CO3:Ability to present importance of function and event</p> <p>CO4:Ability to explain objects & Document Object Model</p> <p>CO5:Ability to create basic game controls script coding</p>
	19BSG3C04	3D assets I	<p>CO1:Ability to plan assets management and optimization with game engine</p> <p>CO2:Ability to create model for game development</p> <p>CO3:Ability to create seamless UV texture techniques for game objects.</p> <p>CO4:Ability to define a mesh, and design appropriate rigging.</p> <p>CO5:Ability to create paint weights on organic deformable meshes, and hard non-deformable meshes</p> <p>CO6:Ability to animate a rigged character (walk cycle)</p>
	19BSG3C02L	3D game design Lab	<p>CO1 :Ability to explain 3D game ecosystem</p> <p>CO2:Ability to design the resources for a 3D game development</p> <p>CO3:Ability to describe pipeline techniques required for a 3D game</p> <p>CO4:Ability to project the game mechanism and its interface</p> <p>CO5: Ability to explain game management and optimization techniques</p>

Semester	Course Code	Course Name	Course Outcomes (COs)
	19BSG3C04L	3D assets I Lab	<p>CO1:Ability to plan assets management and optimization with game engine</p> <p>CO2:Ability to create model for game development</p> <p>CO3:Ability to create seamless UV texture techniques for game objects.</p> <p>CO4:Ability to define a mesh, and design appropriate rigging.</p> <p>CO5:Ability to create paint weights on organic deformable meshes, and hard non-deformable meshes</p> <p>CO6:Ability to animate a rigged character (walk cycle)</p>
	19BSG3S251	Lighting and camera	<p>CO1:Ability to explain about light theory and implement in a scene.</p> <p>CO2:Ability to create 3 point lighting set ups.</p> <p>CO3:Ability to explain the importance of the camera & camera angles including the attributes</p> <p>CO4:Ability to plan renderers for the given 3D scene</p> <p>CO5:Ability to create Render Passes using hyper shade.</p>
	19BSG3S251L	Lighting and Camera Lab	<p>CO1:Ability to explain about light theory and implement in a scene.</p> <p>CO2:Ability to create 3 point lighting set ups.</p> <p>CO3:Ability to explain the importance of the camera & camera angles including the attributes</p> <p>CO4:Ability to plan renderers for the given 3D scene</p> <p>CO5:Ability to create Render Passes using hyper shade.</p>
	19BSG3S252	Matte Painting	<p>CO1:Ability to use matte painting to combine 2d projections into 3d or live footage</p> <p>CO2:Ability to combine different elements together whether it is 2d or 3d element</p> <p>CO3:Ability to integrate the captured photos in the matte painting process</p> <p>CO4:Ability to understand basic skills for matte painting like perspective, composition and color correction</p> <p>CO5:Ability to produce landscape (natural / fantasy), cityscape (natural / sci-fi) matte painting</p>

Semester	Course Code	Course Name	Course Outcomes (COs)
	19BSG3S252L	Matte Painting Lab	<p>CO1:Ability to use matte painting to combine 2d projections into 3d or live footage</p> <p>CO2:Ability to combine different elements together whether it is 2d or 3d element</p> <p>CO3:Ability to integrate the captured photos in the matte painting process</p> <p>CO4:Ability to understand basic skills for matte painting like perspective, composition and color correction</p> <p>CO5:Ability to produce landscape (natural / fantasy), cityscape (natural / sci-fi) matte painting</p>
IV	19BSG4C01	AI for Games	<p>CO1: Ability to discuss and implement software development techniques to support the creation of AI behaviour in games</p> <p>CO2: Ability to understand and utilize a variety of graph and path planning techniques</p> <p>CO3: Ability to learn to create agents that are capable of planning actions in order to achieve goals for example, chess-playing computers, vehicle simulation games.</p> <p>CO4: Ability to learn AI techniques to create game AI.</p> <p>CO5: Ability to understand methods and importance of neural networks in AI.</p>
	19BSG4C02	Handheld Device	<p>CO1: Ability to explore more about the hand held devices / consoles and android versions including the publishing platforms</p> <p>CO2: Ability to work on specialties and functionality required for the mobile devices</p> <p>CO3: Ability to learn process of game development techniques for the android</p> <p>CO4: Ability to analyse the android troubleshooting methods and best practices</p> <p>CO5: Ability to optimize and build the game in various platforms</p>

Semester	Course Code	Course Name	Course Outcomes (COs)
	19BSG4C04	3D Assets II	<p>CO1: Ability to generate models based on the game requirements</p> <p>CO2: Ability to categorize the workflow of texturing mapping</p> <p>CO3: Ability to create an appropriate light setup for a 3D scene in a game engine</p> <p>CO4: Ability to identify game objects organization techniques.</p> <p>CO5: Ability to understand the importance optimization in game engine.</p>
	19BSG4C02L	Handheld device Lab	<p>CO1: Ability to explore more about the hand held devices / consoles and android versions including the publishing platforms</p> <p>CO2: Ability to work on specialties and functionality required for the mobile devices</p> <p>CO3: Ability to learn process of game development techniques for the android</p> <p>CO4: Ability to analyse the android troubleshooting methods and best practices</p> <p>CO5: Ability to optimize and build the game in various platforms</p>
	19BSG4C04L	3D Assets II Lab	<p>CO1: Ability to generate models based on the game requirements</p> <p>CO2: Ability to categorize the workflow of texturing mapping</p> <p>CO3: Ability to create an appropriate light setup for a 3D scene in a game engine</p> <p>CO4: Ability to identify game objects organization techniques.</p> <p>CO5: Ability to understand the importance optimization in game engine.</p>
		Particles Effects	<p>CO1: Ability to students will be able handle the shuriken particle system in a game engine</p> <p>CO2: Ability to experience the particle system properties for game enhancement</p> <p>CO3: Ability to create the effects based on the game genres as per the requirements</p> <p>CO4: Ability to familiar in various effects in the game engine</p> <p>CO5: Ability to identify required effects based in the game requirements.</p>

Semester	Course Code	Course Name	Course Outcomes (COs)
	19BSG4S361	Particles effect lab	<p>CO1: Ability to students will be able handle the shuriken particle system in a game engine</p> <p>CO2: Ability to experience the particle system properties for game enhancement</p> <p>CO3: Ability to create the effects based on the game genres as per the requirements</p> <p>CO4: Ability to familiar in various effects in the game engine</p> <p>CO5: Ability to identify required effects based in the game requirements.</p>
	19BSG4S362	Sound Design	<p>CO1: Ability to Course will explain the importance of sound design in AV production</p> <p>CO2: Ability to will understand sound recording techniques based on the scenario</p> <p>CO3: Ability to discover the significance of sound and its application</p> <p>CO4: Ability to analysis the sound editing techniques to apply on the required audio clip.</p> <p>CO5: Ability to design sound for region specific sounds</p>
	19BSG4S362L	Sound Design Lab	<p>CO1: Ability to Course will explain the importance of sound design in AV production</p> <p>CO2: Ability to will understand sound recording techniques based on the scenario</p> <p>CO3: Ability to discover the significance of sound and its application</p> <p>CO4: Ability to analysis the sound editing techniques to apply on the required audio clip.</p> <p>CO5: Ability to design sound for region specific sounds</p>
V	18BSG5C01	Game Publishing and Testing	<p>CO1: To evaluate testing methods and process.</p> <p>CO2: To analyze fundamentals and procedures testing made on an application.</p> <p>CO3: To measure efficacy different testing techniques used on games</p> <p>CO4: To validate components and structure for testing.</p> <p>CO5: To simulate publishing techniques for various platforms.</p>

Semester	Course Code	Course Name	Course Outcomes (COs)
	18BSG5C02	Game Architecture	<p>CO1: Ability to describe essentials of game architecture.</p> <p>CO2: Ability to evaluate the layers of game architecture.</p> <p>CO3: Ability to analyze frame stream in-game software.</p> <p>CO4: Ability to assess the components</p> <p>CO5: Ability to test run time engine architecture and their methods</p>
	18BSG5D114	Level design for Games	<p>CO1: Ability to design levels, balance, flow, obstacles and interactivity</p> <p>CO2: Ability to create realistic game lighting</p> <p>CO3: Ability to list the components involved in level development</p> <p>CO4: Ability to develop and test functional prototypes of game levels consistent with predetermined rules, mechanics, characters and narrative structures</p> <p>CO5: Ability to design game strategies for different genres</p>
	18BSG5D114L	Level design for Games Lab	<p>CO1: Ability to design levels, balance, flow, obstacles and interactivity</p> <p>CO2: Ability to create realistic game lighting</p> <p>CO3: Ability to list the components involved in level development</p> <p>CO4: Ability to develop and test functional prototypes of game levels consistent with predetermined rules, mechanics, characters and narrative structures</p> <p>CO5: Ability to design game strategies for different genres</p>
	18BSG5D221	ADVANCED MODELLING AND TEXTURING	<p>CO1: Ability to describe game modelling techniques</p> <p>CO2: Ability to create stylized and photorealistic environment / properties as per the game genres.</p> <p>CO3: Ability to model human character</p> <p>CO4: Ability to create a hyper realistic output using Zbrush.</p> <p>CO5: Ability to create textures using Mudbox</p>
	18BSG5D221L	ADVANCED MODELLING AND TEXTURING LAB	<p>CO1: Ability to describe game modelling techniques</p> <p>CO2: Ability to create stylized and photorealistic environment / properties as per the game genres.</p> <p>CO3: Ability to model human character</p> <p>CO4: Ability to create a hyper realistic output using Zbrush.</p> <p>CO5: Ability to create textures using Mudbox</p>

Semester	Course Code	Course Name	Course Outcomes (COs)
	18BSG5D222	CHARACTER ANIMATION	<p>CO1: Ability to describe role of strong posing in character animation</p> <p>CO2: Ability to analyse timing and sequencing in animation</p> <p>CO3: Ability to create blendshapes libraries for facial expressions.</p> <p>CO4: Ability to create lip sync for voice overs and other audio clips.</p> <p>CO5: Ability to resolve physics and penetration issues for the given motion capture data</p>
	18BSG5D222L	CHARACTER ANIMATION LAB	<p>CO1: Ability to describe role of strong posing in character animation</p> <p>CO2: Ability to analyse timing and sequencing in animation</p> <p>CO3: Ability to create blendshapes libraries for facial expressions.</p> <p>CO4: Ability to create lip sync for voice overs and other audio clips.</p> <p>CO5: Ability to resolve physics and penetration issues for the given motion capture data</p>
	18BSG5D112	ANDROID PROGRAMMING	<p>CO1: Ability to describe features of android architecture.</p> <p>CO2: Ability to create UI rich apps and publish localized application</p> <p>CO3: Ability to appraise mobile data management</p> <p>CO4: Ability to seamlessly integrate sensors and multimedia in App development</p> <p>CO5: Ability to debug, publish and market an IP.</p>
	18BSG5D112L	ANDROID PROGRAMMING LAB	<p>CO1: Ability to describe features of android architecture.</p> <p>CO2: Ability to create UI rich apps and publish localized application</p> <p>CO3: Ability to appraise mobile data management</p> <p>CO4: Ability to seamlessly integrate sensors and multimedia in App development</p> <p>CO5: Ability to debug, publish and market an IP.</p>
		WEB DEVELOPMENT	<p>CO1: Ability to describe web ecosystem</p> <p>CO2: Ability to design simple web pages</p> <p>CO3: Ability to create a CSS external style sheet</p> <p>CO4: Ability to analyze the various elements and attributes used in HTML.</p> <p>CO5: Ability to describe XML features.</p>

Semester	Course Code	Course Name	Course Outcomes (COs)
		WEB DEVELOPMENT LAB	CO1: Ability to describe web ecosystem CO2: Ability to design simple web pages CO3: Ability to create a CSS external style sheet CO4: Ability to analyze the various elements and attributes used in HTML. CO5: Ability to describe XML features.
VI		VIRTUAL REALITY	CO1: Ability to create a simple VR project CO2: Ability to describe interaction in VR devices CO3: Ability to manage development of game movements CO4: Ability to plan optimizing methods for a VR application CO5: Ability to publish a VR application
		VIRTUAL REALITY LAB	CO1: Ability to create a simple VR project CO2: Ability to describe interaction in VR devices CO3: Ability to manage development of game movements CO4: Ability to plan optimizing methods for a VR application CO5: Ability to publish a VR application
	18BSG6S411	STUDIO DESIGN & PROJECT MANAGEMENT	CO1: List production pipeline requirements. CO2: Describe hard and soft infrastructure requirements CO3: Plan human resource deployment CO4: Perform SWOT Analysis for a market opportunity CO5: Present risk mitigation and remediation strategies
	18BSG6S412	GAME ENGINE	CO1: To explain importance of game engine CO2: To elucidate scripting techniques using C++ CO3: To assess physics parameters required for game development CO4: To construct particle systems and camera techniques CO5: To identify about the build process and platforms
	18BSG6S412L	GAME ENGINE LAB	CO1: To explain importance of game engine CO2: To elucidate scripting techniques using C++ CO3: To assess physics parameters required for game development CO4: To construct particle systems and camera techniques CO5: To identify about the build process and platforms

