GAME DEVELOPMENT (GAME)

GAME 120 Introduction to Interactive Design and Game Development (5 Credits)
This course begins to investigate visual and audio communication involving user actions, strategic design, and the illusion of motion. Through individual approach and expression in traditional media, students are encouraged to experiment with the juxtaposition and sequence of design elements and imagery and to develop a sense of artist-audience construct and consequence.
Prerequisite(s): (DRAW 101 or FOUN 220) and (DIGI 130 or CMPA 110).
Attributes: Studio Elective Requirement

GAME 121 Introduction to Game Development (5 Credits)
Through hands-on experience, students are introduced to critical aspects of the game industry from non-digital games to indie games to the latest video games. Roles and responsibilities within the game development team are discussed and practiced through in-class exercises, and genres are critically introduced, discussed, and explored. Key individuals, companies, and associations are also explored, and controversies are examined. The course culminates in a group project.
Prerequisite(s): (DIGI 130 or CMPA 110).

GAME 130 Digital Design Aesthetics (5 Credits)
This course provides the foundation for visualizing and understanding the essential vocabularies, principles, and concepts of design, color, and visual literacy as applied to interactive digital work.
Prerequisite(s): DIGI 130 or CMPA 110.
Attributes: Studio Elective Requirement

GAME 220 Core Principles: Programming (5 Credits)
Students develop the core principles of programming interactivity through object-oriented programming techniques using visual scripting tools and hand-coded scripting languages. Experiential learning enables students to develop applications and projects that include complex interactive websites, experimental interactive work, and online games.
Attributes: Studio Elective Requirement

GAME 236 Core Principles: Game Art (5 Credits)
Students explore and develop digital content creation techniques and aesthetic skills required to model, texture and generate accurate materials for 3D game assets. Through the use of standard 3D software, students learn methods and procedures to create industry-standard digital content efficiently and accurately. Students create game-ready content in 3-D, utilizing real-world observations and the use of original and existing concept art.
Prerequisite(s): ARVR 110; GAME 130; ITGM 130; VSFX 130; VFX 230; ANIM 190; BREN 200 or SEQA 224.
Attributes: Studio Elective Requirement

GAME 256 Core Principles: Game Design (5 Credits)
Students explore, apply, and discuss the core principles of game design, including the game space, game mechanics, the game player, and the design decisions that create the game state. Through in-class game play and game design exercises, students examine the design process needed to build today's games. Through the exploration of player agency, immersion, structures of goals, challenges, pacing, encounters, quests, puzzles, conflicts, and rewards, students learn the rules of play and apply those principles to in-class game design projects.
Prerequisite(s): (GAME 120; ITGM 120; GAME 121 or ITGM 121) and (GAME 130; ITGM 130 or BREN 200).

GAME 258 Modeling for Game Development (5 Credits)
Students develop an understanding of 3D, the principles of modeling and video game aesthetics while exploring the creation of 3D models specifically designed for integration into a game engine. Aesthetics, construction, communication, sculptural skills, and quality of work are emphasized.
Prerequisite(s): GAME 236 or ITGM 236.
Attributes: Studio Elective Requirement

GAME 266 Core Principles: Game Tech (5 Credits)
Real-time rendering technology allows game artist and level designers to create immersive game environments that respond to the player's action within the game space. Students in this course are prepared for high-level careers in the video game industry by creating event-driven environments and learning to work with the multiple toolsets existing in contemporary game engines required to produce functional game level.
Prerequisite(s): (VSFX 210; VFX 210; GAME 236; ITGM 236 or ANIM 249) and (GAME 220 or ITGM 220).
Attributes: Studio Elective Requirement

GAME 267 Core Principles: Interactive Design (5 Credits)
This course focuses on understanding and applying the core principles of designing and developing interactive games and applications. Students are introduced to industry-standard authoring techniques and technologies for delivery on the Web and as stand-alone applications. Designing and implementing interactivity is the focus of the course.
Prerequisite(s): ADBR 150; GRDS 205; GAME 220 or ITGM 220.
Attributes: Studio Elective Requirement

GAME 277 Core Principles: User-centered Design (5 Credits)
Students examine the core principles and methodologies used throughout the interactive design industry for creating screen-based dynamic media—websites, information installations, mobile applications, etc. Specifically, students address the interactive design process used to create dynamic media based on how a user may want or need to use products or systems.
Prerequisite(s): (GAME 120; ITGM 120 or ITGM 122) and (GAME 130 or ITGM 130).
Attributes: Studio Elective Requirement

GAME 310 Animation for Games (5 Credits)
Animation provides a sense of immersion while giving players feedback about the state of the game. Students learn to create animation assets for both 2D and 3D games. Topics covered range from basic key frame animation and creating player character cycles to importing each student's animation into an existing game engine.
Prerequisite(s): VSFX 210; VFX 210; ANIM 249; GAME 258 or ITGM 258.
Attributes: Studio Elective Requirement

GAME 326 Applied Principles: Programming (5 Credits)
In this course, students learn programming techniques and skills utilizing programming languages in common use by game developers and interactive designers. Students gain basic understanding of computer science concepts, awareness of different types of computer languages, and use of a program-development environment, as well as an understanding of control structures, data structures, program logic, and problem-solving and object-oriented programming methodologies.
Prerequisite(s): GAME 220 or ITGM 220.
Attributes: Studio Elective Requirement

GAME 333 Digital Sculpting: Creatures and Characters (5 Credits)
3D concept artists create complex organic models to populate the imagined worlds of video games, 3D animations, and visual effects. In this course, students cultivate digital sculpting skills as they produce realistic character and creature sculpts with aesthetic appeal, mood, and texture using 2D and 3D editing, painting, and sculpting technologies.
Prerequisite(s): VSFX 210; VFX 210; ILLU 225; GAME 236; ITGM 236 or ANIM 249.
Attributes: Studio Elective Requirement

GAME 336 Applied Principles: Game Art (5 Credits)
As the visual quality and expectations of digital games increase, so does the need for higher quality art content as well as cohesive and consistent art direction. By focusing on issues such as next generation digital content creation, art direction methodologies, visual complexity, and modularity, students design and create visually effective and highly detailed runtime environments utilizing next generation workflows and pipelines.
Prerequisite(s): VSFX 210; VFX 210; GAME 236; ITGM 236 or ANIM 249.
Attributes: Studio Elective Requirement

GAME 337 Applied Principles: Information Architecture (5 Credits)
This course focuses on the categorization of information into a coherent structure, the interactive design process, and the delivery and designing of visual interfaces. Students are expected to develop a conceptual framework for real-world applications that can easily be understood and quickly accessed, exploring issues from the industry, art, and society.
Prerequisite(s): GAME 220; ITGM 220; GAME 256 or ITGM 256.
Attributes: Studio Elective Requirement

GAME 342 Narrative Content Design for Games (5 Credits)
From linear narratives to massive multiplayer online games, game designers translate story visions into fully-realized and interactive entertainment experiences. In this course, students explore narrative structures as well as player expectations and responses through collaborative development of an interactive, industry-ready game design.
Prerequisite(s): GAME 120; ITGM 120; GAME 121 or ITGM 121.
Attributes: Studio Elective Requirement

GAME 346 Digital Sculpting: Real-time Creature Pipelines (5 Credits)
From amorphous creatures to warrior princesses, character artists drive the visual and emotional quality of games. In this course, students produce 3D character and creature models for integration into production applications and complex workflows for optimization. Students learn to incorporate 2D texturing and rendering, re-topology, UV and high-resolution digital sculpting applications to create organic models.
Prerequisite(s): GAME 333 or ITGM 333.
Attributes: Studio Elective Requirement

GAME 347 Applied Principles: Physical Computing (5 Credits)
Students explore the ways in which nontraditional input devices create interactive user experiences. In addition to the technical, aesthetic, and conceptual concerns of this art form, students assess the work of a range of artists. Students develop concepts, experiments, and prototypes for self-contained interactive objects in immersive environments.
Prerequisite(s): GAME 220 or ITGM 220; Liability waiver is required.
Attributes: Studio Elective Requirement

GAME 351 Game User Experience (5 Credits)
Students expand their knowledge of interactive design and game development as they step into the role of game UX researcher. Exploring the highly relevant field of game user experience, students combine research and design principles to build and optimize playable experiences. Through the development of functional prototypes and high-fidelity interfaces, students showcase their interactive and visual design skills.
Prerequisite(s): UXDG 101; UXDG 310; GAME 256; ITGM 256; GAME 267 or ITGM 267.

GAME 356 Applied Principles: Game Design (5 Credits)
This course builds on the core principles of game design and delves into the many systems and mechanics that make up the practice of applied game design. Through in-class exercises and design projects, students develop many of the active systems and mechanics utilized in contemporary game design and use a variety of acknowledged industry methods of documentation to present and formalize their designs.
Prerequisite(s): GAME 256 or ITGM 256.
Attributes: Studio Elective Requirement

GAME 357 Applied Principles: Interactive Web Design (5 Credits)
Key concepts of Web design are presented through a series of technical and design workshops. Students are introduced to the latest authoring and animation tools and learn how to apply their knowledge of the software to create dynamic and responsive Web designs.
Prerequisite(s): ADBR 205; GRDS 205; GAME 220 or ITGM 220.
Attributes: Studio Elective Requirement

GAME 358 Real-time Digital Materials and Surfaces (5 Credits)
From the depths of the ocean to the surface of the moon, game designers explore advanced concepts of material and texture to create believable worlds with visually faithful digital surface simulations. In this course, students learn to replicate the physical properties of surfaces and use cinematic techniques to portray complex material interactions and progression for inclusions in digital game environments.
Prerequisite(s): VSFX 210; VFX 210; GAME 236; ITGM 236 or ANIM 249.
Attributes: Studio Elective Requirement

GAME 360 Interactive Game Project (5 Credits)
Students design and develop games, websites, and interactive media through a series of technical and design workshops. The course explores intermediate and advanced technical and conceptual aspects of design and development for group-based games and interactive projects.
Prerequisite(s): GAME 220 or ITGM 220.
Attributes: Studio Elective Requirement

GAME 364 Scripting for Games (5 Credits)
In this course, students write scripts for a current game engine in order to alter its existing functionality as well as create new interactive elements. Ultimately, students learn to create what the industry calls an engine modification (MOD).
Prerequisite(s): GAME 220 or ITGM 220.
Attributes: Studio Elective Requirement

GAME 366 Applied Principles: Game Tech (5 Credits)
Real-time materials and environmental effects development constitute one of the largest growing areas in game development for artists. As graphics hardware and game engine technology improve, the demand rises for skilled artists who can take advantage of these tools to add cinematic and visual interest to the digital game experience. Using industry-standard methodologies, students employ professional techniques and practices to create complex materials, particle and environmental effects for games using a real-time game engine.
Prerequisite(s): GAME 266 or ITGM 266.
Attributes: Studio Elective Requirement

GAME 370 Digital Media Entrepreneurship (5 Credits)
This course introduces students to entrepreneurship relating specifically to technology and digital game industries. Students learn by researching and conducting case studies about successful and failed start-up companies. The final project culminates in simulating the technology start-up process – conducting marketing and competitive research, creating financial projections, writing an executive summary, and creating and pitching investor and client presentations.
Prerequisite(s): GAME 121; ITGM 121; GRDS 229 or ADBR 252.
Attributes: Studio Elective Requirement

GAME 380 Game Development Portfolio (5 Credits)
With a focus on integrating imagery, websites, video, and various elements into an interactive portfolio, this course addresses concepts, cross-platform developments, and issues concerning aesthetics, interface design, and use of media. Students collect relevant material and produce a digital portfolio, packaging for portfolio, résumé, cover letter, business card, and flatbook portfolio.
Prerequisite(s): (GAME 326; ITGM 326; GAME 356; ITGM 356; GAME 366 or ITGM 366) and (GAME 336 or ITGM 336).
Attributes: Business-focused elective; Studio Elective Requirement

GAME 405 Game Development Studio I (5 Credits)
Students apply their skills to creating a workable interactive project or video game in a simulated professional environment. Topics include content creation within a limited resource environment. The course emphasizes production-oriented goals in order to provide students with a professional skill set and a body of fine art.
Prerequisite(s): (GAME 326; ITGM 326; GAME 356; ITGM 356; GAME 366 or ITGM 366) and (GAME 336 or ITGM 336).
Attributes: Studio Elective Requirement

GAME 415 Advanced Principles: Programming (5 Credits)
Students master advanced program design methodologies, object-oriented design, and programming techniques using C++. By developing reusable and modular code, students learn to build complex applications.
Prerequisite(s): GAME 326 or ITGM 326.
Attributes: Studio Elective Requirement

GAME 433 Advanced Digital Sculpting: Creating Environments and Props (5 Credits)
From dense woodlands and majestic cities to gnarly trees and ornate thrones, compelling 3D game environments and props create mood and atmosphere to shape the player experience in subtle but impactful ways. In this course, students acquire advanced modeling, sculpting, and texturing techniques as they produce highly detailed game environments and props. With a focus on real-time rendering, students integrate advanced techniques and assets in the production pipeline, advancing their professional prowess as 3D environment artists.
Prerequisite(s): GAME 333 or ITGM 333.
Attributes: Studio Elective Requirement

GAME 446 Advanced Digital Sculpting: Art Direction and Integration (5 Credits)
From the first pitch meeting to the execution of a playable game, art direction for character design involves integration of strong storytelling and advanced production planning. In this course, students learn advanced digital sculpting techniques to create 3-D sculpts consistent with the game's creative vision and appropriately prepare sculpts for animation and rigging in the next phase of the production pipeline.
Prerequisite(s): GAME 346 or ITGM 346.
Attributes: Studio Elective Requirement

GAME 447 Advanced Applied Principles: Physical Computing (5 Credits)
Students explore advanced methods and technologies to develop interactive designs and artwork utilizing physical input devices. Lectures, discussions, and hands-on projects expose students to the latest applications of interaction design, such as ubiquitous computing, augmented reality, and tangible computing. Students learn to work with a wide range of technologies, enabling them to create sophisticated interactive installations, alternative games, and touch-based interfaces.
Prerequisite(s): GAME 347 or ITGM 347; Liability waiver is required.
Attributes: Studio Elective Requirement

GAME 465 Game Development Studio II (5 Credits)
Students work in a collaborative, simulated professional environment to address issues including content creation in a group dynamic, strategic planning, goal-oriented planning, and game theory and design. This course provides students with a significant amount of professional-quality material for portfolio inclusion.
Prerequisite(s): GAME 405 or ITGM 405.
Attributes: Studio Elective Requirement

GAME 475 Game Development Postproduction (5 Credits)
This final phase of the student's senior project focuses on the production and mastering of a senior interactive or game project, including final design, programming or scripting, focus testing, testing, and implementation. Students also create support materials, such as a product website, and work to integrate these into their portfolios.
Prerequisite(s): GAME 465 or ITGM 465.
Attributes: Studio Elective Requirement

GAME 479 Undergraduate Internship (5 Credits)
Internships offer students valuable opportunities to work in a professional environment and gain firsthand experience to help them prepare for careers. In an approved internship setting, a student typically spends one quarter working with an on-site professional supervisor and a faculty internship supervisor to achieve specific goals and objectives related to the program of study.

GAME 502 Game Design Perspectives (5 Credits)
Game design is the art that brings together rules, players and game components in order to create an experience for the player. Through study and application, students learn the foundations of game design and the game design pipeline, sample the methods of great game designers, explore IP usage and design in emerging media, and apply this knowledge in a series of in-class exercises and individual designs, both proposed and executed.

GAME 505 Game Art Methods (5 Credits)
Students explore a variety of tools and methods used by artists in the game industry, focusing on process and critique. Through an emphasis on presentation and language, students further refine their core skills needed to be a successful digital game artist.
Attributes: Studio Elective Requirement

GAME 706 Game Design Documentation (5 Credits)
In this course, students gain a solid understanding of game design documentation processes that are crucial for writers and designers of interactive work. Issues involving the game design sequence, fundamental game design techniques, taxonomy of documentation terms and communication through documentation to other departments are investigated, analyzed and critiqued. Students also explore a wide variety of game industry documentation types and needs.

GAME 710 Game Art: Engine Pipeline and Practices (5 Credits)
Game engines are vital to the creation of video games and interactive experiences. Students gain experience working with a game engine and explore various art and design pipelines used by different disciplines within the game industry. Concentrating on the creation of virtual environments, key frames, and cinematic camera work, students learn to manage the step-by-step process of game engine production.
Attributes: Studio Elective Requirement

GAME 712 Game Tech: Gameplay Scripting (5 Credits)
Gameplay scripting is an essential part of development and allows artist and designers to create interactive assets, events, and interfaces. In this course, students build expertise with an industry standard scripting language as they script gameplay elements and create small playable games.
Attributes: Studio Elective Requirement

GAME 714 Game Design: Ludic Methodology (5 Credits)
Students experience an in-depth, hands-on examination and critique of the art of game design. Through a non-digital medium, students explore a variety of topics, ranging from history to design methodologies that strengthen their vocabulary in game analysis. Working through a range of game mechanics and design patterns, students explore different styles of games, culminating in a non-digital prototype.
Attributes: Studio Elective Requirement

GAME 720 Game Art: Virtual World Building (5 Credits)
The visual artistry found in modern game environments has risen to astounding heights. In this course, students employ industry workflows and methodologies to design and build real-time game environments. From creating block outs to developing modular asset kits, students produce professional, and well-crafted world in a game engine.
Prerequisite(s): GAME 710.
Attributes: Studio Elective Requirement

GAME 722 Game Tech: Real-time Materials and Shaders (5 Credits)
Students explore advanced concepts in materials and texturing as applied to game engines and graphics processing unit (GPU) rendering. Utilizing 3D painting methods, students develop digital surfaces with realistic representations of physical properties and environmental influences. Students use photography, light, and texture as reference for the creation of real-time renderings and image manipulation.
Prerequisite(s): GAME 710 or GAME 712.
Attributes: Studio Elective Requirement

GAME 724 Game Design: Immersive Level Design (5 Credits)
Level designers create immersive, dynamic, goal-driven gameplay experiences through the application of design techniques and practices, including pacing, rewards, and cinematics. Students script events and utilize existing gameplay kits and input systems to create playable levels. Students apply a variety of techniques to design engaging encounters for different game genres.
Prerequisite(s): GAME 712 or GAME 710.
Attributes: Studio Elective Requirement

GAME 730 Game Art: Character Creation and Digital Sculpting (5 Credits)
Dynamic and memorable characters drive engagement and elevate gameplay experiences. In this course, students explore character creation for real-time entertainment through research and ideation that begins with 2D visualization and culminates in a finished 3D project. Utilizing discussions, critiques, and design exercises, students focus on advanced digital sculpting techniques required to become a successful character artist in the field of game development.
Prerequisite(s): GAME 710.
Attributes: Studio Elective Requirement

GAME 734 Game Design: Systems and Simulation (5 Credits)
Digital games are a collection of individual systems working in unison to create an interactive experience. Students investigate the role of system designers in the game industry, and acquire techniques on how to develop, communicate, and implement these systems. Through in-class exercises, demonstrations, and lectures, students learn to design, prototype, and simulate systems for games.
Prerequisite(s): GAME 712 or GAME 710.
Attributes: Studio Elective Requirement

GAME 740 Game Art: Art Direction and Look Development (5 Credits)
Through careful examination and analysis of influential works, across various forms of digital media, students learn to develop a visual language and define a cohesive artistic vision. With a focus on establishing an art pipeline and documentation, students define a visual style that can be communicated to a team and applied in a game production environment.
Prerequisite(s): GAME 710.
Attributes: Studio Elective Requirement

GAME 742 Game Tech: Real-Time Particles and Effects (5 Credits)
Students in this course learn to master real-time visual effects workflows and paradigms. Enhancing scripting skills for the creation of programmable FX for games, students explore and manipulate different types of particle systems. Using various genres for reference, from nature to fantasy and realistic to stylized, students design professional quality game FX.
Prerequisite(s): GAME 712.
Attributes: Studio Elective Requirement

GAME 754 Game Design: Professional Production Pipeline (5 Credits)
Immersed in a simulated game production environment, students collaborate to design and construct an original game. Students utilize professional production pipelines and techniques as they navigate the complexities of time-management, project planning, and workload distribution for effective team productions.
Prerequisite(s): GAME 710; GAME 712 or GAME 714.
Attributes: Studio Elective Requirement