# Courses in the Interactive Media Major

| Course | Course Title | Course Description |
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| GAME 010 | History of Game Development | This course covers the history and evolution of electronic game development, focusing on design elements, technical innovations, societal influence, and the impact of marketing. The course will dissect the roles of programmers, designers, artists, and writers, as well as provide an overview of various software and hardware developments for the gaming industry. Students will gain a global and historic view of the interactive media field and its origins. |
| GAME 025 | Game Design Fundamentals | This course serves to introduce the various aspects of game design for those intending to work as part of management, production, and/or design teams. The student will begin with an analysis of gaming, with consideration of various platforms, game genres, playability, objectives, rule dynamics, and overall quality. Further, the student will learn the elements of production including game conceptualization, story development, and interface, character, and soundtrack, and level design. |
| GAME 030 | Examining Play | This course will cover how playing video games affects the brain and how players respond to different forms of interaction. We will cover how exactly games affect mood and emotion as well as what kind of skills you learn in- game that you can bring into the real world. Students will also study various types of play, and how players react to events and triggers in games. Ultimately students will learn how they can use this knowledge to make better, more interesting and more impactful games. |
| GAME 050 | Game Pitch & Design | In this class students will learn how to craft high quality game design documents as fundamental design aids for memory and communication as well as how to create and deliver effective verbal pitch statements based on design document contents. |
| GAME 055 | Procedural Modeling | Procedural Modeling will provide in-depth study of methodologies utilized within all 3D-related industries related to procedural and non-destructive model design. Procedural systems on both a macro and micro level will be covered, while maintaining a wider perspective of non-destructive modeling capabilities. This course will strengthen practical knowledge in 3D modeling, providing a greater understanding of the relationship between traditional 3D modeling principles and more contemporary procedural techniques. |
| GAME 060 | Procedural Visual Effects | Procedural Visual Effects will provide in-depth study of methodologies utilized within all 3D-related industries related to procedural and non-destructive visual effects. Procedural systems on both a macro and micro level will be covered, while maintaining a wider perspective on the current state of the visual effects industry. This course will strengthen practical knowledge in rigid body simulation & destruction, particle effects, volume dynamics, and visual effects integration into real-time game engines. |
| GAME 065 | UI/UX Design 1 | This course provides foundation skills in the areas of user interface and user experience design. Topics covered include research, user journeys, use cases, personas, wire-framing, prototyping and visual design. Industry standards, guidelines, and conventions will explored. |

| GAME 075 | Literary Development of Virtual Worlds | This course looks at traditional storytelling and literary development. Students will then apply classical techniques to the development of virtual worlds, both through non-linear narrative and 3D deployment of literary creations. |
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| GAME 080 | Storyboarding Animation | This course covers the design process of storyboarding which encompasses the fundamentals in the pre-production phase of any digital video, multimedia, or computer gaming project. During the first phase, students will learn the value of project management, presentation skills, and effective communication. Second phase lessons include the technical aspects of planning scenes with consideration given to scene set up, stage mapping, virtual or physical camera angles, and object and character movement. Emphasis will be placed on visually translating written descriptions and rendering genre and tone through effective visual blocking. Production techniques include the use of traditional drawing materials to formulate sketches, text description boards, and prototype digital renderings. |
| GAME 085 | Raster and Vector for Games | This course will introduce Game students to Adobe Photoshop and Illustrator. Students will learn the differences between Raster and Vector images and the appropriate uses for each. Students will gain a full understanding of the interface and tools in the software. The course will cover the uses of these two programs throughout the game development process. Topics include creating sprites and sprite sheets, tile sets, painting UV maps, creating textures, creating title and menu screens, and digital painting. |
| GAME 090 | Intermediate Game Dev | This course introduces students to more advanced concepts in game design and development such as ideation, digital prototyping, interface design, usability testing, teamwork, project scoping and management. The main emphasis of the class is on the conceptualization of innovative design goals and the execution of those goals in the form of a complete, polished intermediate game project. |
| GAME 095 | Digital 3D Modeling | This course covers the principles and techniques involved in creating 3- dimensional media. Students will learn the step by step process of 3D graphics including modeling with NURBs, polygons, and subdivisions using sophisticated 3D software such as Maya. They will also acquire skills in texture design and UV Mapping skills, lighting, scene setup and rendering. |
| GAME 100 | Texturing | Using a combination of 2D and 3D graphics applications, students will learn to create textures that are mapped onto real-time 3D models. A variety of visual styles as well as procedural texturing will be covered. |
| GAME 105 | Environment Art | Environment Art is a specialization within game development which straddles the line between modeling and level design. In this course, students will learn to build art assets such as modular architectural components and reusable landscape models, then construct full real-time environments in a commercial game engine. |
| GAME 110 | UI/UX Design 2 | This course provides advanced skills in the areas of user interface and user experience design. Special attention is paid to the integration of UI/UX designs in industry standard game engines. Interactive media standards, multiple platforms, and conventions will be explored. |

| GAME 120 | Real Time Light, Shading | This course covers the techniques involved in preparing 3D models for the rendering process. Students will design complex shading networks, explore various light types and attributes, and build lighting rigs common to the animation, visual effects, and gaming industries. Additionally, tools and concepts related to the compositing process are explored including the utilization of render layers and render passes. |
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| GAME 130 | Digital Audio Production | This course explores the fundamentals of the medium of sound and processes of sound-design, with the goal of understanding, articulating, and creating audio assets for games. Through demos and creative projects, students will experiment with the essential building blocks of sound and explore audio principles such as acoustics and perception, the use of microphones and digital recording hardware, editing, signal-processing and mixing using ProTools, Foley recording and sound-effect production, sampling and MIDI, audio synchronization to video, and applications of audio assets in digital-media and game development. The course sets a solid foundation for the understanding of sound while developing a strong toolset for working within the medium |
| GAME 135 | Digital Music Studio | This course explores the world of MIDI and sound-design through virtual- instruments and synthesized techniques. Through demos and creative projects, students will learn essential building blocks of synthesized sounds by using virtual-instruments in ProTools, interfacing MIDI controllers with software, creation of sound-effects through synthesized means, basic rhythmic and tonal music theory, and the creation of musical assets for games. The course sets a solid foundation for the understanding of sound- design and a historical context for the field of Game Audio, while developing a strong toolset for working within the medium. |
| GAME 140 | Animation and Motion Graphics | This course will focus on the planning, design and implementation of motion graphics and animation. The student will learn techniques in storyboard creation, keyframe animation, integration of audio and video and more to create visually interesting moving designs. Online and mobile topics will be covered along with kinetic typography and special effects. |
| GAME 150 | Visual Design and Media | This course explores design elements and solutions for interactive media including an introduction to interaction design and UI/UX. With screen-based design as the focus, topics covered include color theory, design principles, typography, branding, tools and techniques, and ideation. Design research, strategy, and implementation techniques will be covered in relevant, hands-on projects. Industry-standard software, techniques and tools will be introduced. |
| GAME 160 | Foley and Field Recording | This course involves the research and production of audio recordings using live studio-based Foley techniques and site-based field recordings. The class will involve the use of microphones, portable recorders, studio recording, location-based recording, and advanced digital editing tools to develop audio assets such as sound effects for interactive media and video. |
| GAME 165 | Game Audio 1 | This course focuses on game audio production, and the techniques and methodologies commonly used in implementing sound and music assets into an electronic game environment. Game engine components are introduced, as well as middleware tools for designing interactive, dynamic and adaptive systems. Asset management and general project workflow will be examined as part of the game development structure. |

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| GAME 170 | Game Audio 2 | This course builds on the techniques and methodologies taught in Game Audio 1. Principles of sound in a game engine environment are reviewed, followed by deeper examinations into game audio processes and techniques for implementation including advanced use of middleware tools, coding and script management, and real-time DSP. Audio design document authoring and goals will be discussed. Asset management tools and version control techniques will be explored in a team project-based environment. |
| GAME 175 | Writing for Fantasy and RPG's | This course covers the broad palette of fantasy and its sub-genres, genre- and lore-appropriate game-text, character development within fantasy, world development within fantasy, writing within the constraints of game development tools, traditional narrative storytelling, cinematic scripts, voiceover scripts, dialogue and narrative, writing specs, writing proposals, writing for established intellectual properties, and analysis of existing games. |
| GAME 180 | Digital Painting | This course covers the creation and implementation of computer graphics within the framework of multimedia and game design. Examples of topics covered include - Matte Painting, Digital Painting, Speed Painting, Concept art, Character & Creature Design, and creating 2D assets and sprites for games. |
| GAME 185 | 3D Animation | This course covers the techniques involved in animating 3D models in 3D scenes utilizing sophisticated software such as Maya. Students will learn the process of creating and building a 3D scene from objects, lighting placement, and camera manipulation. Furthermore, the animation of characters including model skeleton building, rigging, and key frame animation will be covered in detail. |
| GAME 190 | Game Programming with Data Structures | This course provides a review of the fundamentals of C++, the standard language of the game industry, and builds on those fundamentals to create moderately complex games. Beginning with simple games, the course progresses through more interesting game functions: game loops, using and creating software objects, using functions to break game programs into manageable chunks of code, how to address and manipulate computer memory, and define objects in terms of other objects. |
| GAME 195 | Game Programing 2 | This course focuses on the subject of game programming using a third party 3D game engine to provide a uniform interface for audio, 3D visuals, and device input. Students will use open source multi-platform, tools and game libraries, such as those available in Torque to produce platform independent code. Students will also have the opportunity to interact with the online game programming community to further develop their skills. |
| GAME 200 | Level Design | This course teaches the concepts and skill sets involved in creating successful levels within any game format. Emphasis will be given to integrating levels within a given game design, construction guided by balance and rhythm, and approaches for handling technical and environmental limitations. Students will develop levels for existing game engines as well as utilizing original game aesthetics. |
| GAME 205 | Digital Cinematography | This course covers the technical aspects of working within the challenging medium of digital audio and video production. With a focus on using non-linear editing methods, students will be able to take full advantage of digital editing processes utilizing the latest in audio and video software such as Sound Forge, Adobe Premiere, and Adobe After Effects. Students will cover all aspects of the production process including audio and video recording and capturing, digital editing of sound and video, special effects generation, and final preparation for use in interactive media such as DVDs, advanced video games, and the World Wide Web - each with its own technical and production requirements. |

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| GAME 210 | Agile Project Management | In this course, the student will learn how to apply Agile and Scrum techniques to manage software and interactive media development projects. Through immersive and evolving case studies and other activities, the student will acquire the theory, practical knowledge and skills to plan, manage and close a software/game development project. |
| GAME 215 | Principles of Motion Capture | This course focuses on principles and techniques related to producing, editing, and rendering of motion capture information. Both pre-recorded and live motion capture data will be utilized throughout the course. General animation project discussions will take place focusing on the various considerations and processes for leading and supervising an animated project. |
| GAME 220 | Virtual Reality in Gaming | This course is an advanced level exploration meant for Interactive Design and Programming majors, focusing on the virtual reality experience as it applies to interactive development, covering the history of VR approaches, practical applications, typical challenges, and current trends in gaming. This course specifically explores the use of VR headsets, as well as other newly developed input devices, for the purposes of creating engaging, immersive interactive experiences. Both the technical and design side of working within this medium will be addressed. |
| GAME 225 | Mobile Game Production | This course explores the unique characteristics of developing and designing interactive media and games for mobile devices. Students will learn the various hardware and software appropriate for this platform as well as how to evaluate and address the challenges inherit in the technology. Lessons addressing the global audience as well as the rapidly expanding reach and influence of this dynamic distribution platform will be integral to the practical application of mobile development throughout the course. |
| GAME 230 | Rigging for Animation | This course covers the techniques involved in preparing 3D models for the animation process. Students will design efficient and intuitive rig systems using popular industry tools such as bones, joints, control objects, and constraints. Furthermore, the process of skinning and application interoperability will be explored. |
| GAME 235 | Digital Organic Modeling | This course covers the techniques involved in building organic 3D models using industry standard modeling-specific applications. Emphasis is placed on human and non-human figure study, its importance the modeling process, and the utilization of application tools for an efficient production pipeline. Methodologies for building animation-ready assets from concept sculpts will also be explored. |
| GAME 240 | Visual Effects | In this course students will learn to create real-time visual effects, using effects tools within a commercial game engine. Topics covered include development of different styles of effects, particles, texture and material creation, and timing. |
| GAME 245 | Music Composition for Games | The course explores advanced game music production concepts and techniques. Topics cover scoring, arranging, and orchestration. Adaptive and non-linear audio concepts are introduced in the context of gameplay, as well as subjects such as looping, branching, and randomization, transition matrices, algorithmic operations, and creating multi-layered stems. Concepts are introduced and explored through applied creative projects. Historical context is given within the development of game music. |

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| GAME 250 | Synthesis and Sampling | This course surveys advanced sound-design tools and software used by professionals in the industry and expands upon skills from Digital Audio Production and/or Digital Music Studio. Numerous synthesis techniques and procedures are covered such as advanced analog emulation and subtractive synthesis, FM, wave-table, granular, and semi-modular synthesis, physical modeling, software samplers, and signal processing through effects. Tools created by independent designers will also be implemented and critiqued. Students will use these tools for advanced sound production and the development of audio assets for games. |
| GAME 255 | Game Studio | This course is to be taken by Game students enrolled in a Game Studio: Art, Audio, Design, Production or Programming section. The course is centered on an instructor guided project which may include serious games, simulations, artistic installations, entertainment, or new technological exploration. The course will provide a hands-on development environment for a formal interactive title to be released. Students will gain experience working as part of a game studio team with various departments, leads, development infrastructure, and real-world demands. Students are required to take this course multiple times during the course of their degree program. May be repeatable for credit. |
| GAME 260 | Serious Game Project | This course is the capstone course for the Context component of the interactive media curriculum and is thematically connected with the experience component. Students are required to link their humanities and social science work with their interactive media studies. Teams of students work on game projects that are designed for a primary purpose other than pure entertainment. The "serious" adjective generally refers to applications that have been designed for use by industries like defense, education, scientific exploration, health care, emergency management, city planning, engineering, and politics. These projects draw heavily on the outcomes students have mastered as a result of their general education courses. |
| GAME 265 | Artificial Intelligence | This course provides an overview of the field of artificial intelligence with special attention to uses in the electronic gaming field. Students will develop logic grids for intelligent agents, discuss how learning and communication are integral elements of artificial intelligence. Philosophical discussion of such concepts as intelligence, cognition, learning, and the Turing test will be addressed. |
| GAME 270 | Game Analytics | The course will discuss optimization of 3 phases of game design development and production - marketing (how do we acquire the users?), retention (how do we keep and convert users to players?) and monetization (modeling the game changes to get the optimal monetization). The course will also discuss the Stochastic approach, introduce students to relational databases, statistical software and other analytical tools used in Game Analytics. |
| GAME 275 | Character Animation | Animated characters are becoming increasingly popular as pivotal assets in animation, storytelling, and simulation related industries. The fundamentals of creating animation lie in the ability to generate believable characters that have emotion and life. This course will explore tools and techniques used in the animation industry to design convincing character animations including blocking, breakdowns, non-linear, and procedural animation. |
| GAME 280 | Advanced Character Animation | This course continues the study of processes and procedures related to character animation initiated in GAME 275. Facial animation and lip synchronization concepts are presented along with current technologies utilized in the efficient design of dialog-based animation. Unlike GAME 275 |

| | | Character Animation where focus is placed on designing character animation loops for real-time engines, this course focuses on story and narrative for cut scenes and short film. |
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| GAME 285 | Advanced Topics in Game Development | Courses offered under the designation Special Topics may represent emerging issues or specialized content not represented in the curriculum. May be repeatable for credit if topic is different. |
| GAME 295 | Game Audio Production Studio | The overall purpose of this course is to design and create a fully realized game audio production to be implemented in a working game, in tandem with the Senior Game Project course. The course involves creating all audio assets to be used in-game including sound-effects, music, and voice-overs, and the implementation of adaptive audio theories, real-time mixing, and middleware. Topics build on previous sound-design and composition courses. Students will work both individually and as a team. This course deepens the preparation of students for entry-level work in sound design and music at a game development company or as a freelance professional. |
| GAME 299 | Directed Study | This course is only run with the permission of the instructor and the course work is determined through discussions between the instructor and student. It typically fulfills a program requirement that cannot be met in another way. |
| GART 100 | Principles of Drawing for Games | The overall purpose of this course is to design and create a fully realized game audio production to be implemented in a working game, in tandem with the Senior Game Project course. The course involves creating all audio assets to be used in-game including sound-effects, music, and voice-overs, and the implementation of adaptive audio theories, real-time mixing, and middleware. Topics build on previous sound-design and composition courses. Students will work both individually and as a team. This course deepens the preparation of students for entry-level work in sound design and music at a game development company or as a freelance professional. |
| GART 110 | Painting Studio | Through twelve projects in acrylic paints, students will explore their own sense of beauty and visual expression. Some projects concentrate on pure visual structure, some on emotional expression, and some on image making (landscapes, faces, still life). Realism and "drawing ability" are irrelevant, and students can enter the course at any level, from beginner to advanced. |
| GART 210 | Drawing for Games 2 | This course is a follow-up studio course that continues to solidify and expand the basic drawing concepts that students explored in GART 100 Principles of Drawing. The student will be working with wet media techniques (watercolors, oils, markers) as they develop their drawing, and painting techniques in creating 2D objects and more complex subject matter. Students also learn the relationship of plain objects, figures and animals, and their relationship to an environment or composition. |
| GART 225 | Cartooning Basics | This course is an introduction to the basic principles of cartooning. Students will learn the essential components of cartooning, ranging from initial concept to finished cartoon. The history of the cartoon will be covered, along with its contemporary application. Cartoon genres will include caricatures, "Funnies", single panel (including political cartoons), and Manga/Anime style drawing. Student will work to develop their own cartoon style while learning to use a variety of media such as pen and ink, marker and watercolor. Digital techniques, including the use of the computer, will be researched and explored. |

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| GART 235 | Life Drawing for Games | The students will enhance their drawing skills by drawing the human figure using live models. Students will study proportion, light and shade, simple anatomy of the human form, and develop a basic understanding of the human figure in action and in motion. |
| GCPT 010 | Computer Programming 1 | Introduction to Programming, this course introduces principles of programming in an object-oriented environment. Topics include design and implementation of programs that use a variety of data structures, functions, and conditionals. Students will be expected to design, implement, and debug programs. |
| GCPT 020 | Computer Programming C++ | This course will improve upon existing object-oriented programming skills and introduce new concepts in programming. Topics covered are classes/objects and constructors, overloading operators, strings, pointers, namespaces, encapsulation, and reading and writing files. |
| GCPT 110 | Data Structures C++ | Manipulation of character strings and data (searching, sorting, etc.) file processing, program segmentation, linearly linked lists, matrices, trees and graphics, stack and queues will be covered using the language of C++. |