

## UAT-Online: Associate of Science in Game Programming

### Program Description

The continued expansion of the game industry into all aspects of daily life is creating new opportunities for game production and development. Gaming technology is used in many applications from PC, console, mobile, web and casual gaming to serious gaming, training, simulation, medical treatment and beyond. This vast array of gaming styles and use of gaming technology creates a need for industry professionals who understand both the technology behind gaming as well as the theories of gameplay.

Students in Game Programming will gain an insight into what is involved at all levels of game development, from the initial concept to the completed project. Courses will emphasize the essential issues in developing games for multiple platforms and applications.

Game Programming students focus on programming principles, skills and techniques required to create the code and gameplay systems for game projects. Courses will emphasize programming skills such as on C/C++ programming, scripting, data handling, problem solving, DirectX/Open GL development, game engine architecture and networking. Students in the Game Programming program will also develop a critical approach to the study of gameplay, interaction and design. Graduates of the Game Programming program will have the skills required to pursue a career in the game industry with a focus on the artistic needs of a game project. Within the program, students will be able to focus on programming and on the tools used to create code for games. Using industry standard tools and practices in a team-based environment, programmers will work with artists and designers to create complete projects. This well-rounded approach provides students with a deep understanding of all aspects in the game creation process and the skills to further the craft of game development.

### How UAT-Online Works

UAT-Online's Associate of Science in Game Programming program has been developed to give students the ability to focus 100% of their attention on each individual skill and class needed to become successful in this rapidly growing field. Classes are taken one at a time, and last five weeks each. Three classes will be taken each semester for a total of 15 weeks per semester. Courses are taken sequentially in order to build on the foundation of previous skills learned. This helps to increase overall understanding and comprehension of the material.

### Objectives

- Master the programming principles and languages used in game programming
- Create and implement compelling game programs utilizing industry-standard tools and software
- Develop original game project code for Web, console, PC and handheld gaming platforms
- Produce game code for multiple gaming applications including triple-A, serious, casual and mobile games
- Develop analytical skills for examining gameplay focusing on programming structures and code
- Create game code for and collaborate on numerous projects with industry-style production pipelines
- Participate in every level of game development from initial design to publishing
- Develop a diverse portfolio of industry-standard game programs and code contributing to complete works

### University Core Courses

**INT200 Internship**  
**PRO102 Professional Skills Development**  
**PRO211 Senior Innovation Project I: Innovation**  
**TCH110 Foresight Development**

### General Education Courses

**ENG101 Composition I**  
**ENG102 Composition II**  
**ENG305 Mythology, Folktales and Fairy Tales**  
**MAT175 College Algebra**  
**PHY120 Introduction to Electricity and Magnetism**  
**SOC150 Technology and Society**

### Degree-Specific Courses

**CSC100 Computer Programming Concepts**  
**CSC130 Object-Oriented Design**  
**CSC203 Java Programming I**  
**CSC215 C/C++ Programming I**  
**GAM101 Game Concept Design**  
**GAM104 Introduction to Game Programming I**  
**GAM200 Critical Game Studies**  
**GAM220 Applied Game Theory**  
**GAM225 Web Game Programming**  
**GAM250 Gaming Platforms and Standards**  
**GAM252 Game Tools and Techniques**  
**GAM351 Writing for Interactive Games (WI)**

*This list represents the combination of courses necessary for the degree. Course sequence and offerings may change due to software or other scheduling requirements. All courses designated (WI) are Writing Intensive courses.*



### University Core Course Descriptions

#### **INT200 Internship**

An internship is considered a supervised, practical experience that is the application of previously learned theory. Employers/sponsors work with the student to meet specific objectives and/or learning goals and provide special mentoring or networking opportunities. In exchange, the intern helps the employer/ sponsor in meeting overall work goals for the agency/company.

Students completing 3.0 credit internships must work a total of 150 hours, or 10 hours per week for 15 weeks.

#### **PRO102 Professional Skills Development**

This course is designed to develop lifelong learning strategies. This course provides the basic skills for success in the educational, professional and personal environment. Specific topics explored are personality profile analysis, developmental styles, conflict resolution skills, group problem solving and learning style analysis. Collaboration and group skills development will be emphasized. Students will have the opportunity to receive extra assistance in computer and word processing skills.

#### **PRO210 Portfolio I/Capstone I**

This course is intended to fulfill the associate's-level student's portfolio/capstone graduation requirement. Students in this course will compile and present their individual portfolio to the faculty in their disciplines at least twice over the course of the semester. Feedback will be used to improve the quality of the final submitted portfolio.

#### **TCH110 Foresight Development**

Foresight is the act of looking to the future. This course helps you learn better global, business and personal foresight, so you can better enjoy and manage your own future. This course will explore the big picture history of accelerating change from universal, historical and technological perspectives, as well as identifying global trends that are affecting individuals, society, businesses and governments. Additionally, the course will examine how organizations make bets on the future, and gives the student a chance to explore career prospects in a variety of fields. Finally, discussion of how biology, psychology, community and culture help and hinder personal thinking about the future will be discussed. We will articulate and explain the four fundamental foresight processes: innovating the future (creative development of products and services); planning the

future (developing shared goals and processes); profiting in the future (achieving measurable positive results, including environmental, social, and economic benefits); and predicting the future (trend identification and analysis). Assignments will be fun, personalized to your own foresight goals, and will include brief readings, brief writing, discussions, debates, visuals, film, podcasts and games.

### General Education Course Descriptions

#### **ENG101 Composition I**

This course is designed to present effective techniques in organizing, developing and revising academic essays that reflect collegiate-level critical and logical thinking skills. Students will write a minimum of four essays, directed toward audiences with specific rhetorical situations, that stress descriptive, analytical, evaluative and persuasive/argumentative writing. Students will also develop their critical reading skills: analyzing, evaluating and critiquing the claims and evidence used by various authors.

#### **ENG102 Composition II**

This course expands and refines the objectives of Composition I. It emphasizes critical/logical thinking and reading; problem definition; research strategies; and writing analytical, evaluative and/or persuasive papers that incorporate research. Students will be introduced to the art of modern information research by conducting literature reviews and electronic searches using a variety of media.

#### **ENG305 Mythology, Folklore and Fairy Tale**

Escape to the fantastic realms of mythology, folktales and fairy tales as we read stories from around the world and through the ages. You might be surprised at how pervasive the archetypes and themes from these genres are in our modern world, from movies to popular animation and games. The course allows students to explore the cultural similarities and differences in myths, folktales and fairy tales through selected readings, discussions and writings.

#### **MAT175 College Algebra**

This course will include a thorough treatment of relations and functions, polynomial functions, exponential and logarithmic functions, systems of equations and inequalities, matrices, conic sections, sequences, induction and probability.

#### **PHY120 Introduction to Electricity and Magnetism**

This course will introduce the student to basic concepts of electricity and magnetism with discussion of practical applications. Charges and fields will be used to understand the concepts of potential, resistance, capacitance and inductance and solve basic DC circuits. Math through college algebra required.

#### **SOC150 Technology and Society**

SOC150 is designed to introduce students to the essential understanding, development, theories, strategies and historical interrelation of technology and society. The purpose of the course is to provide students with the tools necessary to understand the role technology has played in society and to prepare students for interaction in a technology driven world with a comprehensive look at the relationship between technology and culture. Technology will be recognized

as a driving force in cultural revolutions and as a foundational concept of human development. The course will consider rapidly changing technologies in modern society, the problems associated with these changes, and the affects of these technologies on the societies and cultures around the world.

#### **Degree-Specific Course Descriptions**

##### **CSC100 Computer Programming Concepts**

The purpose of this course is to introduce the fundamentals of computer science and programming to those students majoring in this area. Students will become familiar with problem-solving techniques and algorithm development using computers. This will include a structured high-level programming language. Topics will include flow of control, assignment, arrays, functions, and input and output, among others.

##### **CSC130 Object-Oriented Design**

The objective of this course is to define the principles of Object-Oriented Programming (OOP)—data hiding, encapsulation, inheritance and polymorphism—and to introduce the concept of design patterns. This course will introduce the student to the OOP way of thinking and problem solving. The main tool used in this course is the Unified Modeling Language, the industry standard language for specifying, visualizing, constructing and documenting the artifacts of software systems.

##### **CSC203 Java Programming I**

This course surveys the major elements and applications of object-oriented programming and the JAVA programming language. Students are introduced to JAVA syntax, data types, operators, IO operations, control structures, member functions and classes. Students learn the fundamental skills needed to develop and debug simple object-oriented applications.

##### **CSC215 C/C++ Programming I**

This course provides an introduction to the syntax of C++ as a programming language, as well as an introduction to related concepts in C. Topics include data types, control structures, arrays, pointers, functions, classes, inheritance, virtual functions and polymorphism.

##### **GAM101 Game Concept Design**

Want to play? This course is an overview of game development from the creative and theoretical (as opposed to purely technical) standpoint. Students will learn to analyze games and gameplay elements, examine genres and trends in gaming, and formulate their own outline for an ideal game. We will also examine social issues and pressures related to gaming and the ultimate question: why do we play games?

##### **GAM104 Introduction to Game Programming I**

Introduction to Game Programming I is the first part of a two course introduction to game programming, and is recommended for students with no programming experience. Students will learn the basics of computer programming: variables, data types, looping, conditional logic, functions, arrays, types, and other basic programming constructs, using a fully integrated compiler and editor environment called DarkBasic Professional. This software uses the BASIC language, allowing students to explore basic programming concepts without being limited by the complexity of a

language such as C++. This first-year course will give students programming experience by writing simple games, and is a prerequisite for GAM105.

##### **GAM200 Critical Game Studies**

This course is an introduction to advanced critical techniques and approaches to game design, game theory and the gaming audience. Using techniques of critical theory, ludology and game theory, we'll take a deep look at the structure of games and their interaction with the user and explore how games balance rules with freedom and risk with reward. The course will also deal with interface design, user control issues, data representation for the gamer and feedback loops. Present and future game genres will also be examined; they will also be compared and contrasted among different platforms and styles of play.

##### **GAM220 Applied Game Theory**

This course will apply the theories of game design by taking a game concept from the conceptual stage to a completed project. Students will continue the exploration of game theory by discussing and demonstrating how it is applied to production-based projects. Students will leave this course with an extension of good game design as a completed project that demonstrates their understanding of the topic.

##### **GAM225 Web Game Programming**

This course teaches students how to design and create web-based games using the Java language. Students learn how to create an Applet project in Java using the most popular IDEs, JBuilder and Eclipse. Students will start with writing simple vector graphics and will progress to raster graphics, learning how to load and draw bitmaps, how to create animated sprites and draw them transparently, and how to implement advanced 2D concepts like tile-based scrolling. By the end of the course, students will have created a complete game that runs in a web browser.

##### **GAM250 Gaming Platforms and Standards**

This course gives an overview of different platforms available to the game designer. The students will have an understanding of the strengths and weaknesses of the different gaming platforms. This course will also address the technical and psychological aspects of multi-user/multi-player gaming environments. Finally, students will be exposed to the current standards that exist in the industry. This includes, but is not limited to, modeling, texturing, sound editing, programming, video creation, marketing, etc.

##### **GAM252 Game Tools and Techniques**

One of the challenges of the game development environment is the constant flux of tools, plug-ins and engines used by developers and the "mod" community. Often these tools have poor documentation, rough user interfaces and less-than-stellar stability, making mastery an elusive goal. The purpose of this project-based course is to allow a student to choose a game toolset, SDK or mod environment and produce a project in a team-oriented environment with a focus on learning the tool itself and its quirks, limitations and workarounds. During the course, we will discuss team-building, asset and script generation, moving and converting data types between applications, and producing polished, final

work; these skills will be put to use in level design and mod projects for both artists and programmers.

**GAM351 Writing for Interactive Games (WI)**

Dynamic content and electronic games pose a serious challenge for the writer: How do you adapt linear narratives to the ever-changing environments of today's interactive entertainment? Today's surfers and gamers are no longer passive consumers. They want to take part in the story and make choices that have an impact. Through the use of BioWare's Neverwinter Nights and other tools, we will explore hypertext writing and the power of truly personalized storytelling and take the once-linear game story to the next level.